ANNUAL REPORT

Provincial Board of Health

1915

Thirty-Fourth Annual Report

OF THE

Provincial Board of Health

OF

Ontario, Canada

FOR THE YEAR

1915

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:

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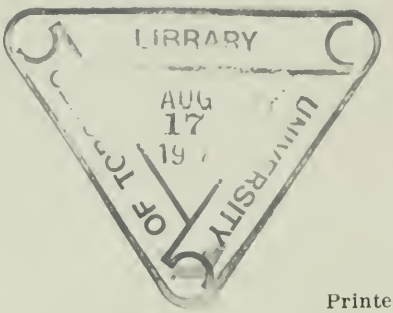
1916



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TORONTO

To His Honour Sir John Strathearn Hendrie, K.C.M.G., C.R.V.O., etc., etc., etc.,

Lieutenant-Governor of the Province of Ontario.

May it Please Your Honour.—I herewith beg to present for your consideration the Thirty-fourth Annual Report of the Provincial Board of Health for the year 1915.

Respectfully submitted,

W. J. Hanna,

Provincial Secretary.

To The Honourable W. J. Hanna, K.C., M.P.P.,

Provincial Secretary of Ontario.

Sir,—I have the honour to submit for your approval the Thirty-fourth Annual Report of the Provincial Board of Health, made in conformity with and under the provisions of the Public Health Act, for the year 1915.

I have the honour to be, Sir,

Your obedient servant,

John W. S. McCullough,

Chief Officer of Health.

PROVINCIAL BOARD OF HEALTH OF ONTARIO
1915

ADAM H. WRIGHT, M.D., Chairman ..... Toronto.
HENRY R. CASGRAIN, M.D. ..... Windsor.
THOMAS E. KAISER, M.D. ..... Oshawa.
WILLIAM H. HOWEY, M.D. ..... Sudbury.
A. A. WEAGANT, M.D. ..... Ottawa.
JAMES ROBERTS, M.D., M.O.H. ..... Hamilton.

Secretary and Chief Officer of Health,
JOHN W. S. MCCULLOUGH, M.D., D.P.H. (Tor.)

Provincial Medical Inspector,
R. W. BELL, M.D.

Provincial Bacteriologist,
J. A. AMYOT, M.D.

Assistant Bacteriologist,
FRANK W. SCHOFIELD, D.V.S.

Branch Laboratory—Kingston.
W. T. CONNELL, M.D.

Provincial Chemist,
H. M. LANCASTER, B.A.Sc.

Assistant Chemist,
W. J. FAWCETT, M.A.

Provincial Sanitary Engineer,
F. A. DALLYN, B.A.Sc., C.E. (Tor.)

District Officers of Health,

District.
No. 1.—DAVID B. BENTLEY, M.D., Sarnia.
No. 2.—THOMAS J. MCNALLY, M.D., Guelph.
No. 3.—DANIEL A. MCCLENAHAN, M.D., Hamilton.
No. 4.—GEORGE CLINTON, M.D., Belleville.
No. 5.—PAUL J. MOLONEY, M.D., Cornwall.
No. 6.—W. EGERTON GEORGE, M.D., North Bay.
No. 7.—ROBERT E. WODEHOUSE, M.D., Fort William.

Sanitary Inspector,
GEORGE E. YOUNG.

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ANNUAL REPORT

OF THE

Provincial Board of Health for the Province of Ontario

For the Year ending 31st December, 1915

RÉSUMÉ OF TRANSACTIONS OF THE BOARD BY THE CHIEF OFFICER OF HEALTH

This volume constitutes the Thirty-fourth Annual Report of the Provincial Board of Health for the year ending December 31st, 1915.

The four regular meetings of the Board were held, and among other important questions under consideration was the offer of the use of the Experimental Station to the students of the University of Toronto, as indicated in the following resolution of the Board.

"That the Chairman, Secretary and Engineer of the Board interview the President of the University of Toronto, for the purpose of offering the use of the Experimental Station of the Board to the University for extension work and for research in connection with the course in Sanitary Engineering and Hygiene, and that the general expense of the various undertakings be paid by the Board, but that the University be responsible for such chemical supplies and glassware as may be required."

In reply the following letter was received from the President:

"Dear Dr. McCullough:

"Yesterday at the Board of Governors I reported that you had formally offered to the University the use of the Provincial Board of Health Experimental Station, for instruction and research in connection with the University departments of Sanitary Engineering and Hygiene. I informed the Governors that you offer the laboratories free of expense except for the reagents which would be used by the students and for any breakage that they might cause: also, that you were kind enough to say that your Chemist in charge might be authorized to oversee the work of such students, were no university instructor present.

I am glad to say that the Board of Governors have authorized me to accept your offer and at the same time have instructed me to express their thanks for your generosity.

"Yours sincerely,

"Robert A. Falconer,
"*President.*"

The Board is very much gratified that the foregoing arrangement has been made. There is no doubt that the facilities of the Experimental Station will be of considerable value to students of the University, and that in turn the public will be benefited by the resulting diffusion of knowledge in sanitary questions.

In addition to the officers of the Board who were mentioned in the report of last year as having gone to the front, the names of Drs. H. R. Casgrain and James Roberts, members of the Board, must be included as having gone in the spring of this year. Both of these officers are attached to No. 3 Clearing Hospital at Lemnos, in the Mediterranean.

District Officers of Health.

The work of the District Officers who have gone overseas has been taken over in so far as possible by those remaining at their posts. The reports of the latter will be found elsewhere in this volume.

Anti-Typhoid Vaccine.

The Board has continued to supply the anti-typhoid vaccine for the entire Canadian Expeditionary Force since the beginning of the war. The results in prevention of typhoid among our soldiers, both at home and abroad, have entirely justified the Board's action in placing this product of our laboratory at the disposal of the Department of Militia and Defence. No better public health work could perhaps have been done in any direction. The incidence of paratyphoid A and B among the troops is an indication that the vaccine might profitably be modified so as to ensure protection against these infections. The Board is now taking steps to prepare a mixed vaccine against typhoid and paratyphoid.

*Biological Products.**

The success which has attended the arrangement in respect to diphtheria antitoxin outlined in the last report of the Board, whereby the price to the public was reduced to about one-fifth of that charged by commercial houses, has been most satisfactory. The Board has in view a further development which will be announced in due course.

Legislation.

The only legislation in reference to public health, passed by the legislature during 1915, was the following amendment to Section 85 of The Public Health Act.

Rev. Stat. c. 218, s. 85, amended.

"Section 85 of The Public Health Act is amended by adding thereto the following subsection:

Appeal to chief officer of health as to storage of rags, etc.

"(2) In the event of such approval being refused by the medical officer of health, the applicant shall have the right of appeal from such refusal to the Chief Officer of Ontario, who shall examine or cause the premises to be examined, and make such enquiries as he may consider desirable, and grant or refuse such approval, or make such order or direction as he may deem proper, which determination shall be final."

Water Supply and Sewerage.

The work of the Board in scrutinizing and approving of the plans, specifications, etc., of waterworks and sewerage, from various municipalities throughout the Province, is steadily increasing. It is gratifying to know that many muni-

*The various biological products, including Typhoid and Paratyphoid Vaccine, Smallpox Vaccine, Anti-tetanic Serum, Anti-meningitis Serum, Rabies (Pasteur) treatment and Diphtheria Antitoxin are now (1916) given to the public free of charge.

cipalities have come to appreciate the service the Board is rendering them in checking faulty construction, improving their designs and in a general way saving them money and giving increased efficiency to the works to be constructed.

A full report is given elsewhere by the Provincial Sanitary Engineer.

Laboratory.

The work of the laboratory, including as it does the preparation of typhoid vaccine for the Canadian Forces and the examination of contraband liquors for the License Department, continues to increase year by year.

All rabies cases are treated in the laboratory where proper facilities are provided for this service. A detailed report of the work of this branch will be found herein.

The Experimental Plant.

The proposal to use the Board's experimental plant for the purpose of instruction of University students in Sanitary Engineering and Hygiene has already been referred to.

The plant is provided with increased facilities for the illustration of schemes of water purification and sewage treatment. Lately a small plant has been installed for the treatment of sewage by means of activated sludge. It is too soon to report with any degree of confidence following our experience with this plan of treatment, but it is hoped we shall be able to deal with the matter in some detail in the next report.

Annual Conference of Medical Officers of Health.

The annual conference of the Ontario Health Officers' Association was this year held in the city of Peterborough, under the presidency of the late Dr. W. R. Hall, M.O.H. of Chatham, and in conjunction with the annual meeting of the Ontario Medical Association. Our conference was well attended. The papers were of unusual interest. It is found that the officers who attend these meetings regularly are among the most up-to-date and satisfactory medical officers of health in the Province. The Board desires to make special mention of the loss to public health in the death of the late President. Dr. Hall was for many years the public-spirited health officer of Chatham and for several years a member of the Provincial Board. All of us feel that we have sustained a personal loss in his comparatively early death.

Public Health Education.

The Board continues its policy of paying a large amount of attention to public health educational work, by means of the distribution of pamphlets, by the public health exhibit and by public lectures.

Boundary Waters Investigation.

During the year the writer was engaged as Sanitary Advising Expert for the International Joint Commission in its investigations into the question of the prevention of pollution of the international waters. Several meetings have been held with the Commission's engineers and it is expected that a report may be published next year.

DEATHS IN ONTARIO FROM TUBERCULOSIS BY AGES, 1906-1915.

Year.	Total.	Ratio per 100,000	Under 5 years.					5-9	10-14	15-19	20-29	30-39	40-49	50-59	60-69	70-79	80 & over.	Not stated.	Total deaths from all causes.
			0-1	1	2	3	4												
	24,326		779	397	213	135	141	452	591	1,891	6,817	4,972	3,098	2,194	1,539	678	131	298	320,156
1906	2,911	131	251	72	23	14	14	38	74	234	724	604	367	228	169	66	19	14	31,244
1907	2,530	113	74	41	27	20	15	44	62	206	745	499	311	227	173	64	9	13	31,756
1908	2,511	110	68	46	20	13	13	43	67	216	764	479	315	217	136	70	14	30	30,947
1909	2,380	106	47	27	25	9	15	54	54	179	687	487	290	222	163	66	15	40	30,792
1910	2,291	102	38	35	19	15	6	36	55	184	652	463	293	222	160	71	18	24	31,332
1911	2,353	92	63	30	15	10	18	48	64	181	618	476	325	218	156	85	12	34	31,878
1912	2,250	87	53	30	19	9	15	46	42	154	631	500	304	200	134	64	7	42	32,150
1913	2,294	85	53	36	20	10	18	32	41	188	632	479	313	204	156	56	10	47	34,317
1914	2,340	85	54	41	20	16	11	56	58	181	688	469	307	214	116	63	12	34	32,440
1915	2,466	89	79	39	25	19	16	55	74	168	676	516	273	242	176	73	15	20	33,294

This Table Compiled by the Registrar General's Department.

CASES AND DEATHS FROM COMMUNICABLE DISEASES REPORTED WEEKLY BY LOCAL BOARDS OF HEALTH FOR THE YEAR 1915.

	Smallpox.		Scarlet Fever.		Diphtheria.		Measles.		Whooping Cough.		Typhoid.		Tuberculosis.		Infantile Paralysis.		Cerebro-spinal Meningitis.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
January	170	0	204	3	303	25	241	1	20	2	147	7	95	2	1	0	6	6
February	117	0	162	2	281	12	623	2	67	2	106	4	119	64	.....	.....	13	8
March	97	0	160	3	206	9	972	11	60	5	45	5	191	103	.....	.....	26	22
April	38	1	171	2	187	15	922	5	80	6	27	5	144	92	.....	.....	17	14
May	55	0	112	3	191	13	659	9	39	5	24	6	114	81	.....	.....	15	9
June	44	0	99	2	166	16	559	17	65	3	38	4	78	58	1	0	13	8
July	26	0	83	2	173	10	496	6	133	9	53	5	105	70	1	0	13	7
August	39	0	54	2	124	5	162	2	104	5	54	6	90	59	.....	.....	7	7
September	5	0	76	2	140	12	105	5	104	4	148	13	101	54	2	2	4	3
October	5	0	57	3	310	13	400	6	61	2	155	27	114	61	4	1	10	9
November	10	0	97	0	283	17	1,113	9	38	3	61	12	107	64	2	1	7	5
December	20	1	140	5	355	22	3,432	34	111	5	62	2	98	66	2	0	8	7
	626	2	1,415	29	2,719	169	9,684	107	882	51	920	96	1,356	*774	13	4	139	105
Total for 1914	511	2	2,722	60	2,772	213	4,884	60	798	56	1,060	125	1,335	*776	29	5	68	55
" " 1913	774	2	2,746	101	2,194	233	7,895	134	484	84	1,519	213	1,576	*1,040	35	20	61	48
" " 1912	535	3	2,646	111	2,340	238	2,634	58	1,414	142	2,569	305	1,525	*860	49	19	59	58

* Tuberculosis, only 40 in every 100 deaths are reported weekly by Local Boards of Health. The Medical Officers of Health and Secretaries are requested to press the matter of reporting all cases of communicable disease occurring in their municipalities. The information is tabulated in the Toronto office and forwarded to the District Officers of Health whose business is to assist the Local Medical Officers of Health in checking outbreaks of disease.

THE DISTRICT OFFICERS OF HEALTH, PROVINCE OF ONTARIO

JOHN W. S. MCCULLOUGH, M.D., D.P.H. (TOR.), CHIEF OFFICER.

DISTRICT NO. 1.

Comprising the Counties of Lambton, Middlesex, Oxford, Elgin, Kent, Essex. District taken over temporarily by Dr. McNally.

DISTRICT NO. 2.

Comprising the Counties of Grey, Bruce, Huron, Perth, Waterloo, Wellington and Dufferin.

THOMAS J. MCNALLY, M.D.

District Officer of Health, Guelph, Ont.

Herewith we have the honour to submit our annual report for No. 2 District, comprising the Counties of Grey, Bruce, Huron, Perth, Waterloo, Wellington and Dufferin, including the Cities of Guelph, Stratford, Berlin and Galt.

During the year the Sanitary Survey required by the Provincial Board of Health has been completed for those municipalities not formerly reported upon in this district.

In all cases where it could be arranged we met the Local Board of Health and discussed the duties of the Board, and the best methods of applying the Public Health Act to the particular locality under consideration, indicating that the Act as now amended is to be considered as based upon the practice of "Preventive Medicine" rather than merely the control of outbreaks or epidemics of disease after they have occurred.

We are very pleased to be able to report a very marked increase in interest by the public generally in all matters pertaining to Public Health and improved conditions in regard to the prevention of disease.

PUBLICITY CAMPAIGN.

Following up the work of former years the following itinerary mapped out and advertised for the Moving Picture exhibit was carried out with the opening lecture at the Town Hall, Thornbury, on January 11th, in the afternoon for school children and in the evening for adults. Owing to press of other work I was not able to be present at these meetings, but the Local Officer of Health was requested to give a short address. From here we moved to Clarksburg, then to Meaford, Dundalk, Shelburne, Grand Valley, Arthur, Mount Forest, Mildmay, Wingham, Clinton, Seaforth, Mitchell, Milverton, Brussels, Lucknow, Exeter and Hensall. We purposed visiting Kincardine, but owing to a tie-up in the railway service had to cancel our engagement and drive from Lucknow to Exeter. Owing to an appointment having been made for me to address the school trustees of the County

of Essex I was unable to be present at Arthur village or the town of Mount Forest, but requested the Local Officers to give a short address. An incident occurred at the village of Dundalk which shows how these pictures and talks are appreciated. Owing to a clerical error we were billed to appear in this village in the afternoon, which was impossible as we were in Meaford the previous evening and had to drive to Owen Sound to reach Markdale by evening train. The afternoon meeting was advertised by Dr. Martin, the M.O.H., through the schools of Proton Township, and as a result about 700 children assembled only to be disappointed, which was most regrettable; yet notwithstanding this and the fact of our not appearing in the afternoon the hall was crowded to its capacity for the evening meeting by the M.O.H. having our arrival announced by boys in the streets.

With the exceptions noted we held meetings twice daily and in the course of our tour had between 11,000 and 12,000 in attendance, who complimented us on the excellence of the pictures and talks and the wisdom of the Department in thus presenting the subject.

In this district we have now presented these films and given "Health Talks" in practically all municipalities where there is electric power, but we are of opinion that some arrangement should be made where the work might be continued in all parts of the Province, for we are convinced that interest is thus aroused and action stimulated where otherwise there would not be any effort at betterment of conditions.

Communicable Diseases.

Smallpox.

During the year this disease appeared in fifteen municipalities, and in each was controlled so that no second cases occurred except in one instance, and in this case the disease was confined to a very few families; no deaths.

Scarlet Fever.

This disease, although appearing in many municipalities during the year, has not in any instance been allowed to assume the proportions of an epidemic, although in a few instances, because of the mild form, it had not been promptly reported by the family affected or the medical attendant; I am pleased, however, to report that these instances of neglect are becoming less frequent.

Diphtheria.

Diphtheria has appeared in many localities and we are sorry to report that it has claimed a few victims, but its quota is small compared to a few years ago, owing to the excellent results now obtained by early and adequate dosage with antitoxin, which we are pleased to note is now generally recognized by the profession, though there are still a few "Faint Hearts" who fear "heart failure," so do not give the early and proper dose.

In no instance has the disease reached the proportions of an epidemic, and we are pleased to say that the epidemic which afflicted Berlin during last year has been stamped out by the excellent work of Dr. MacGillawee, in searching out and isolating the carriers who we believe were responsible for keeping the disease alive in the city.

Measles.

Here we have the great problem of our work so far as the acute communicable diseases are concerned. This disease has been epidemic in a number of the municipalities of this district during the year, and I regret to say has been "prevented" in only a few instances, though controlled in several. Several reasons may be assigned for this untoward result; first is perhaps the fact that the disease has only been made a reportable disease since the revision of the Public Health Act; second is the fact that formerly it was considered a necessary incident to child life and not of a serious nature; and in the third place, it is yet unfortunately so considered by many of our people, and unfortunately this view is rather nurtured by a few "old time" medical men who publicly and privately express this opinion. Thus we can scarcely wonder at our lack of success, particularly when we remember that the disease is communicable for three, sometimes four, and occasionally five, days before the distinctive rash appears.

As though these were not difficulties enough we have had to contend with the failure of these same householders and medical men to report their cases, and frequently, when discovered and quarantined, they have not remained in isolation; however, by warnings and an occasional prosecution this difficulty is being gradually overcome. Although having to record a large amount of failure in the prevention of this disease we have found considerable encouragement in the fact that our people generally are coming to recognize the serious nature of the disease. From our experience with this epidemic we are of the opinion that our successful prevention of it in future will require the strict quarantine of all non-immune contacts on the first appearance of the disease in a locality for the period of incubation.

Typhoid Fever.

There has not been any serious outbreak of this disease, though a few isolated cases have developed, claiming an occasional victim.

Whooping-cough and Mumps.

These diseases have been prevalent in several localities, but as they have not been properly reported we have been unable to give them much supervision, though we believe they have been better isolated than formerly.

Tuberculosis.

In this district tuberculosis still claims about one and one-half times as many victims as the combined deaths from all acute communicable diseases, notwithstanding the efforts made to educate our people in the proper care of this disease.

From our observation there will not be much, if any, improvement until it is made compulsory for municipalities to provide proper accommodation and special care for this disease, where its victims may be properly attended and yet within reasonable distance of their friends.

Our need of such accommodation in this district is serious, as in the seven counties comprising District No. 2 there is not even one such hospital in operation.

School Nurses.

During the year we are pleased to report that Berlin and Galt have appointed school nurses who are giving excellent satisfaction; in addition to performing their

regular school inspections, they are rendering splendid services which very materially assist in public health work.

This assistance in Berlin in the epidemic of diphtheria was a material factor in aiding the M.O.H. to locate carriers of the disease.

Correspondence.

Without attempting to classify our correspondence we may say truthfully that it covered almost every phase of public health work and was of considerable volume; when to this is added the reports to the Provincial Board on special conditions it will be seen that correspondence required considerable attention.

Slaughter Houses.

We find now a vast improvement in these when compared with their condition before the "Regulations respecting Slaughter Houses" were issued by the Board; yet there are those who have not made the necessary changes, though the number is growing less.

Water Supply.

The water supply at *Guelph* has, during the year, occasioned considerable anxiety, as it was found to be seriously contaminated, causing about 5,000 cases of diarrhoea and a few cases of typhoid fever. The Provincial Engineer, Mr. F. A. Dallyn, as well as Mr. Tate, Mr. DeLaporte, the writer and the local authorities, made several surveys of the system to endeavour to locate positively all the sources of contamination; as a result of these surveys the Provincial Board made several recommendations to the Commissioners, who have carried these out in part; yet the supply is not satisfactory, especially during freshet times. For the protection of the citizens public notices were posted immediately the contamination was discovered, advising all users to boil the water; then as soon as possible an efficient system of chlorination was installed. This is being continued and carefully checked to maintain its efficiency.

The supply at *Stratford* was found to be contaminated even after passing through their mechanical filters, so a system of chlorination was installed and is now in use.

The supply of *Berlin* derived from the pond, being found contaminated, is now filtered, chlorinated and mixed with that obtained from their wells, thus ensuring a pure supply.

We would recommend that the authorities at *Goderich* be required to give effect to the recommendation of the Provincial Engineer, as nothing has been done to protect their supply.

The supply at *Mitchell* is still menaced by being connected up with an impure source for fire purposes.

We would urge the Provincial Board to require *all* municipalities having a public domestic supply to have regular examinations made of the water at stated periods by one of the public laboratories or some person approved by the Board.

Sewage.

At Berlin the efficiency of treatment of their sewage was seriously inadequate, causing contamination of Schneider's Creek, but this is being corrected by additions to their disposal plant. The sewer system is also being extended.

The septic tanks at Stratford are being replaced by Imhoff tanks and other improvements installed which it is expected will stop the serious pollution of the Avon River which has been the cause of serious complaint.

The authorities at Guelph are taking action towards improving the treatment of their sewage. Considerable extensions have been made in the sewer systems of both Stratford and Guelph, which will relieve conditions complained of in these cities.

DISTRICT NO. 3.

Comprising Norfolk, Haldimand, Welland, Lincoln, Wentworth, Brant, Halton, Peel, York.

D. A. McClenahan, M.D.

District Officer of Health, Hamilton.

The year of 1915 was a quiet one as far as expenditure of money for the improvement of sanitation was concerned, in the various municipalities in district No. 3. The reason for this was to be found in the fact of scarcity of money owing to the war, and also to scarcity of labour. Cities like Brantford, St. Catharines, and Niagara Falls are still pouring raw sewage into streams and waterways. This, we trust, may be remedied soon, and then we can more consistently ask the smaller municipalities to take care of their sewage in a proper manner.

Port Colborne made a notable advance as far as sanitation was concerned in passing by-laws looking to the collection of garbage and night-soil. The Council of Port Colborne, ably led by Mayor Steele, and strongly supported by the Board of Health, showed very commendable public spirit in passing these by-laws, apparently against public opinion. The people of the municipality have found out, however, that the plan was a good one and they are now all well satisfied with the change. There was strong opposition to the plan at first, but after one or two public meetings were held and the benefits to be derived were pointed out and the reasons explained for the proposed changes, the plan was carried to a successful conclusion. Port Dalhousie was recommended to try a similar experiment, but so far they have not seen fit to go as far as Port Colborne did. We are hopeful that they may do so in the near future.

Marked improvement has taken place particularly in the inspection of rural school houses and premises, and many reforms have been brought about. I have attended a number of meetings of Municipal Councils and Boards of Health, and have invariably been treated courteously and had suggestions carried out where possible. I have investigated complaints in many municipalities, notably Brampton, Niagara Falls, St. Catharines, Port Robinson, Ancaster, Port Dover, and many others.

DISTRICT NO. 4.

Comprising Counties of Durham, Haliburton, Hastings, Muskoka, Northumberland, Ontario, Peterborough, Prince Edward, Simcoe and Victoria.

GEORGE CLINTON, M.D.

District Officer of Health, Belleville.

I beg to submit the third annual report for District No. 4, being for the year 1915. The following is a synopsis of the work done in my district, of which a full report has been sent to the Health Department.

A careful sanitary survey of forty-two towns and villages, thirty-five townships, fourteen hospitals, four asylums, thirty-nine colleges and schools, fifty-six factories, all the hotels and boarding houses on the Kawartha Lakes, Lake of Bays, Muskoka Lakes, Georgian Bay, Sparrow Lake, twenty slaughter houses, twelve special visits, six visits *re* nuisances, eight visits to military barracks, nine county houses of refuge, six orphanages and children's shelters.

COUNTY COUNCILS.

I met and addressed the County Councils of Simcoe, Ontario, Northumberland and Durham, Prince Edward, Hastings, in January, and the County Councils of Peterborough and Victoria in June.

SUMMER HOTELS AND BOARDING HOUSES.

Inspected the following places:

Muskoka Lake.—Beaumaris, Milford Bay, Roseneath, Hatton House, Cedar Wild, Scarcliff, Rosselair, American House, Swastika Hotel, New Windsor, Bala Park House.

Lake Joseph.—Prospect House, Pinelands, Belmont House, Elgin House, Hamill Point, Stony Brae, Barnesdale, Gordon Bay House, Port Cockburn, Stanley House, Carlingford, Craig Lea.

Lake Rosseau.—Nehpawin, Woodington, Cleveland House, Chilton House, Paington House, Thorel House, Marinus House, The Bluffs, Royal Muskoka, Earnscliffe, Clement House, Maplehurst, Rossmoyne, Monteith House, Rostrevor, Windermere, King's Park, Waskada, Maple Leaf House, Fife House.

Indian River.—Endiang, Havington Farm, Beverly Lodge.

Port Carling.—Port Carling House, Bayview, Algonquin, Oak Crest.

Fairy Lake.—Fairport Inn, Hollingshead, Haverland, Grand View, Deerhurst.

Mary Lake.—Grunwald, Lake View, Lakenwold, The Balsams, Cliff House.

Honey Harbour.—Cottage Resort, Tutie-Pon-Pon, Buena Vista, The Royal, Pleasant Point, Victoria House, Winseona, Go-Home Bay, Mineeoganashene.

Peninsula Lake.—Deerhurst.

Lake of Bays.—Pine Grove Inn, Nor Lock Lodge, Dwight House, Goldie House, Britannia, Point Ideal, Point Cunnington, Island View, The Hemlocks, Ronville, The Narrows, Gonoseyo, Bay View Farm, The Maples, Garyone, Wa Wa, Glenmount, Grand View, Point Pleasant, Langton House, Idylwild, White House.

Sparrow Lake.—Mount Royal, Franklin House, Lakeshore House, Sparrow Cottage, Stanton House, Uneeda Rest, Wenona, Lake View, Idylwild, Peninsular Farm, Helen's Isle, The Methodist Mission.

Kawartha Lakes.—Buckhorn House, The Windsor, Burleigh Falls, Viamede, Mount Julian, McCracken's, Kawartha Park, Belvedere House, Glenwold.

I also visited Presqu' Isle Point near Brighton.

Muskoka Steamers.

Name of Steamer	Septic Tanks
"Sagamo"	2
"Medora"	2
"Cherokee"	2
"Kenozha"	1
"Islander"	1
"Ahmic"	1
"Oriole"	None
"Charlie M"	"

The kitchens and dining-rooms on all the steamers are supplied with covered metal garbage pails. This garbage is given away to different people at terminal points, and anything that cannot be used as feed for pigs, etc., is buried.

Public Institutions.

Asylums.

Cobourg and Whitby—new buildings under construction but not occupied.

In Simcoe County.—Orillia and Penetang.

Colleges and Schools.

The County of Hastings 8, Northumberland and Durham 5, Peterborough 6, Prince Edward 2, Simcoe 9, Victoria 4, Ontario 7, Muskoka 3.

Factories.

Hastings County 4, Northumberland and Durham 12, Peterborough 8, Prince Edward County 13, Simcoe 5, Victoria 4, Ontario 7, Muskoka 3.

Health Exhibit and Moving Pictures.

During February and April health exhibits, moving pictures and lectures were given in Tweed, Havelock, Lakefield, Hastings, Brighton, Colborne, Newcastle, Elmvale, Penetang, Gravenhurst, Bracebridge, Huntsville.

Two exhibitions in each place.

In every case halls were well filled, and much appreciated by the public, especially the children.

Communicable Diseases.

Measles.

An epidemic of measles and mumps in the School for the Deaf, early in the year; no deaths. Measles very prevalent throughout the whole district, with several deaths; I have no data as to number. In some districts the local authorities ignored the regulations until some deaths occurred.

Scarlet Fever.

No epidemic, a few isolated cases.

Diphtheria.

No epidemic, some isolated cases. Since cheaper antitoxin is furnished a marked diminution is evident.

Smallpox.

The only cases to which my attention was drawn was at Beaverton in July, where I found ten cases. The local Medical Officer of Health had it well under control, and my services were asked only in regard to diagnosis. At that time I visited a slaughter house, which I ordered closed at once.

Cerebro-Spinal Meningitis.

A severe outbreak occurred among the troops in Belleville. Prompt action was taken and only two deaths occurred. Every precaution was taken by the military authorities and no cases were reported among the citizens.

During the year I visited eight barracks to assist the military authorities with the sanitary arrangements. Spent considerable time in Belleville, until the barracks were put in a proper condition to protect the men as well as the citizens.

Many of these places had been visited the previous year. A marked improvement in the majority was noticed. I have succeeded in persuading the local municipalities in a number of places to pass by-laws covering the sale of milk, meat, etc. Some have a regular system for collecting and disposing of garbage. Where these by-laws have been passed and enforced they have given good satisfaction.

Owing to the absence of many of our regular Medical Officers of Health who have enlisted and *Pro Tem.* men in their place, the same interest has not been taken, consequently the work has been somewhat retarded.

Much work has been done by correspondence. Several special visits have been made in regard to local nuisances, and when visit was made the difficulty generally was easily overcome.

In conclusion, would consider the progress made has been satisfactory considering the much disturbed condition of the country, financially and otherwise.

DISTRICT NO. 5.

Comprising the Counties of Addington, Carleton, Dundas, Frontenac, Glengarry, Grenville, Lanark, Leeds, Lennox, Prescott, Renfrew, Russell and Stormont.

PAUL J. MOLONEY, M.D.

District Officer of Health, Cornwall.

I hereby submit a condensed report of the work performed by me as a District Health Officer during the year 1915. A detailed report with regard to the above has been filed with the Department.

Contagious Diseases.

Smallpox.

Rockland, Prescott County.—Quite an extensive outbreak occurred here. In co-operation with Dr. Powers, energetic action was taken to stamp out the disease by strict quarantine and vaccination to some degree. In this locality there is also a good deal of antipathy towards vaccination and, being a border town, infectious diseases are hard to control. The M.O.H. handled the outbreak with commendable tact and success. The outbreak occurred in February and required frequent visits to the town.

Inkerman, Mountain Township, Dundas County: Very mild form. Appears to have been epidemic around Mountain Station, previously not recognized as smallpox. One family in the locality became broken up, one child going to live with relations at Inkerman, and here started a new outbreak. Difficulty at first increased by misunderstanding as to who was the legal Health Officer. On visiting locality diagnosis of disease was settled, health officer misunderstanding cleared up, and under supervision of Dr. Ferrier, of Mountain, M.O.H., the epidemic was brought to a satisfactory end. This outbreak occurred during the months of February and March.

Finch Township, County Stormont.—Outbreak near Berwick. Diagnosis of Dr. Crain, M.O.H., disputed. On my visit Dr. Crain's diagnosis confirmed. Cases mild but clearly defined. Several other mild cases in locality not attended by a physician. Sentiment in this locality is very strong against vaccination. Subsequently Dr. Crain managed the outbreak satisfactorily, except that vaccination was not enforced. This outbreak occurred during April.

Harrowsmith, Olden, Kennebec, Hinchinbrooke, Sharbot Lake and Calabogie.—This was a very extensive outbreak which began towards the last of December, 1915, and spread all along the Kingston and Pembroke Railway. The cases in the beginning were so mild that it was not diagnosed by the local physicians until it had become widespread.

(This outbreak will be dealt with in my next yearly report.)

A very instructive picture was presented by one family of seven children near Calabogie. The family before moving here had lived in Ottawa and here one child had been vaccinated. When the children were lined up this child had a perfectly clean skin while the other six were literally covered with smallpox rash.

Cerebro-Spinal Meningitis.

Occurred chiefly among the soldiers mobilized at Kingston. The Provincial Board's serum proved very efficacious in their treatment, recovery occurring in mostly every case. In civilians we had about six cases and the death rate was very high, probably owing to delayed diagnosis and treatment.

Scarlet Fever.

This disease was of a very mild type and, perhaps for this reason, spread almost over the entire district. I estimate we had 5,000 cases.

Diphtheria.

The district did not suffer as severely from this disease as in former years, and was, in all cases, more easily brought under control. The action of the Pro-

vincial Board of Health with regard to the supply of antitoxin undoubtedly contributed to this good result.

Outbreaks at Rockland and Bourget, and a few others, only required visits and outside assistance.

Measles.

There was a widespread epidemic which practically covered the entire district; of this disease I estimate we had at least 20,000 cases. In many localities the disease became so general that the Local Officers claimed that it was entirely useless to try to quarantine the patients, especially as so many families had the disease and were not attended by a physician. The constant movement of recruits from place to place seemed to be a factor in spreading this and other infectious diseases.

Other Infectious Diseases.

Chickenpox, whooping cough, etc., were below average in number. Typhoid outbreaks are dealt with in a separate paragraph.

Typhoid.

Brockville.—A severe outbreak of typhoid occurred in this town during January and February of this year. I think it was undoubtedly a water-borne disease. The severity of the outbreak may be judged by the report the M.O.H., who February 20th reported 176 cases and 12 deaths up to this date.

I had previously advised that the pump house should be located above the town. However, heavy expenditures have been made at the present site and no doubt there are strong financial reasons against moving the pump house to a new location now. Pump house is located towards the east end of the town and down stream. The old intake reached out 150 feet into the St. Lawrence River and the outer end was in 35 feet of water. Above the intake I found a fairly large sewer emptying into river, two safety outlets which operated during storm freshets connected with the town's main sewer, and the town harbour, which is located about 400 yards above the intake and accommodates a large amount of shipping.

Waterworks Intake.—I was not able to determine whether the intake leaked or not. Near the pump house this intake divided into a Y, each arm running into a separate well. Each well had a separate set of pumps attached. The pumps attached to the old well were kept in order in case of need in a large fire, and were not otherwise used for pumping the town's water supply.

Chlorination.—The water in the wells before chlorination proved on test markedly contaminated.

The water in the old well was not chlorinated at all, yet the pumps connected with this well were tested on December 4th, 1914, and the water thrown into the town mains.

The system of chlorination was fairly good but its operation was defective, and at times batches of water were thrown into the mains without chlorination.

Commendable action was taken by the Local Board of Health and the M.O.H. to control the epidemic. A new intake was installed and a new chlorination system attached which gives good results. The disease has been practically eradicated from the town.

I was called upon and visited the town frequently to help the local authorities in their efforts. I asked the Chief Officer of Health for assistance and he sent the

Provincial Sanitary Engineer, Mr. Dallyn, to our help, who rendered most effective service by his expert advice.

I feel that I should mention that Dr. Macaulay, M.O.H., showed marked energy and ability in dealing with this outbreak, and that the Board of Health, the Town Council, and the people repeatedly expressed their appreciation of the assistance rendered by the Provincial Board of Health.

NOTE.—At the outbreak of this epidemic all towns and villages down stream as far as the interprovincial boundary were warned of the danger of the water in the St. Lawrence becoming contaminated, and instructed to take the necessary precautions.

Hawkesbury.—Typhoid fever seems endemic in this town and it could hardly be otherwise, as they use the Ottawa River untreated for a water supply. A large part of the population, I believe, however, are immune to typhoid. The cases in this town were frequent, but not in the form of an epidemic, and no more so than for many years. A proper filtration plant with a system of chlorination is badly needed here.

Thompsonville.—Polish hamlet, also a few retired farmers, just outside the town of Renfrew; about 12 cases. By eliminating probable milk and water infection and that from a near-by cemetery, and owing to the location of the different houses and the condition of the outdoor closets, I came to the conclusion that this was an outbreak due to flies. The original case was probably brought in from some outside point. Enforcement of sanitary regulations and removal of patients to Renfrew hospital stamped out the disease. Dr. Mann, M.O.H., co-operated effectively in the work.

Abatement of Nuisances.

Prescott.—A most unsanitary condition existed in this town, involving a whole block.

The buildings were very old and some of them falling down; outdoor closets were the rule and they were kept in a very dirty condition. It was a typical slum locality, seldom found outside of large cities.

I visited Prescott ten times in connection with this matter and it was only after repeated efforts that conditions were improved. With the passing by the Town Council of a by-law compelling all house owners to connect with the town sewers, with the option of appearing in court, the different house owners at last made the necessary repairs. The locality is not yet satisfactory and I am still giving it my attention.

Other localities requiring visits in most cases were Athens, Elgin, Napanee, L'Orignal, Bourget, Plantagenet, Embrun, Harrowsmith, Olden, Battersea, Williamstown, Alexandria, Apple Hill, Perth, Almonte, Westport, Mallorytown, Lynn, Pembroke, Horton Township, Renfrew, Petawawa, Chesterville, Crysler, Finch, Westboro, Eastview and Ottawa City.

Conclusion.

During the year the Department assisted the military authorities of Canada by allowing me to perform military work in connection with my Provincial Health work. As I was an officer of seventeen years' standing and for two years preceding had a position on the Divisional Headquarters Staff, and as I was unusually well acquainted with Eastern Ontario, the military authorities wished to avail themselves of my services. While I applied for and would much prefer overseas service I was assigned to duties in Canada only.

Besides acting as a physician to the sick soldiers I examined 876 recruits, 500 at least of whom I personally enlisted; 500 vaccinations against smallpox, and 1,000 inoculations against typhoid were performed.

I am not now in military service and am devoting my time exclusively to Provincial Health work.

During the year, although a large part of my time was taken up with military work, my Provincial Health work was also attended to, although systematic inspection of the different municipalities was not made. All correspondence in connection with public health dealing with local difficulties was attended to, and every demand for personal visit to localities was complied with.

DISTRICT NO. 6.

Comprising the districts of Nipissing, Parry Sound, Sudbury, and Temiskaming.

W. Egerton George, M.D.

District Officer of Health, North Bay.

The third annual report of Health District No. 6 and a short résumé of the work in District No. 7 from the 1st January, 1915, to the 31st December, 1915, inclusive.

District No. 6.

During the year I travelled 16,649 miles within this district, at a total expense to the Department of $613.68. This is somewhat less than was travelled in any previous year, but when there is added to this 10,525 miles in District No. 7 the distance covered is indeed very great.

The fund of information collected from the complete sanitary surveys made in the towns and villages during the first two years, has been of invaluable assistance in handling the ever-increasing volume of correspondence.

There has been improvement in the returns of communicable diseases, but the weekly returns of death that are supposed to come in on the same card are very unsatisfactory. In fact it is quite impossible to strike the rate of incidence of any of our communicable diseases, or the mortality rate per thousand, or the mortality rate for each disease. With continued improvement, however, I have hopes that within two or three years these rates may be struck, and, although quite imperfect at the start, they will serve as means of comparison from year to year.

The Provincial Board is to be commended for arranging occasional meetings with the District Officers. In this way many weaknesses of our health legislation from the practical standpoint will be brought to their notice.

Evidence is continually increasing to prove that local boards and sanitary inspectors in rural municipalities, villages and small towns, because of affiliations, friendships and relationships, frequently do not find it convenient to enforce the Health Act or the Regulations. This presents a rather serious menace when inmates of quarantined houses feel at liberty to go where they please. Applications to the District Officer are becoming more frequent to go to these municipalities and take the responsibility of instituting quarantine and controlling it. Where

this has been done the Local Boards have sometimes felt strong enough to continue the enforcement in prolonged or subsequent epidemics; but at other times no improvement seems evident. Where the Districts are so large time does not permit single small municipalities to have so much consideration of the District Officer.

Communicable Diseases.

Measles.

Several large epidemics of measles occurred in this territory during the past year, and although the regulations were carefully enforced in at least two of these no apparent control of the spread of the disease was manifest. The large number of deaths caused by this disease each year demands more efficient regulations for its control. While there were 166 cases reported, I have reason to believe that this was only a fraction of the number that occurred. Only one hundred cases were reported from North Bay, and I have reason to believe that there were at least 150 cases not reported.

Whooping Cough.

Even a smaller proportion of this disease is reported than for measles. Its death rate per 100,000 of population is astonishingly large. The means for controlling it are much better adapted and whooping cough is for this reason much more amenable than measles. As the seriousness of this spasmodic cough becomes more familiar Health Officers must demand and insist on proper supervision, and publicity campaigns must be inaugurated to apprise the poor and labouring class that this is a disease that kills the poor and spares the rich, and that this is largely due to the lack of treatment in the one case as against the other. There were only thirteen cases reported throughout the year.

Smallpox.

Small epidemics broke out in Scotia, Burk's Falls, Cobalt and Haileybury. I gave special attention to the cases which occurred in Burk's Falls and Cobalt. Those in the latter town were efficiently handled, but it was necessary to assume partial supervision of the Burk's Falls outbreak. Contacts were followed as far as possible, vaccinated and quarantined. One subsequent case was all that developed, and this exposure had occurred before I had seen any of them. There was no doubt but that the cases in Haileybury were properly supervised. The Scotia outbreak had made considerable headway before a physician was called.

Scarlet Fever.

Small outbreaks occurred in a dozen municipalities but none assumed serious proportions except in Copper Cliff and Sprucedale. In both cases the disease was very mild and spread rapidly without a physician being called. When in each case the Health Officer did begin to act it took some time to control it, as parents continued to hide it away for fear of the six weeks' quarantine.

Diphtheria.

This disease occurred in ten municipalities with a total of thirty-six cases reported. As with most of the other diseases of this group, there seems to have been carelessness in making complete returns. In New Liskeard it kept breaking

out occasionally for six months until the matter was brought to the attention of the Provincial Board. No cases had been reported. The public became greatly alarmed; and indeed this nervous tension gave the Medical Officer and school nurse much assistance in finding carriers. It was necessary to hold one carrier for ten weeks before two clear swabs were shown. Dr. McCullough, Medical Officer of Health, deserves much credit for the discovery of the case, as he had obtained two clear consecutive swabs from the case during the first two weeks.

Sprucedale has been a vulnerable spot during the past year, having had outbreaks of scarlet fever, diphtheria and typhoid. Some thirteen cases of diphtheria were reported. The Health Officer had much difficulty in searching out the cases as no physician was called until something in the nature of serious symptoms developed. As soon as the public become aggravated enough to check up their neighbours the disease usually comes to an end.

Typhoid.

Haileybury, Parry Sound and Sundridge presented the greatest problems regarding this disease. The Sundridge outbreak was undoubtedly a well pollution with a few direct contacts. The cases at Haileybury and Parry Sound are in some respects similar in origin. Both of these towns pour their sewage into the waters from which they obtain their water supply. Haileybury has a mechanical filter, but there is reason to believe that the water is so concentrated at times that with ninety-nine per cent. of the bacteria being removed by the filter there is still sufficient going through to cause many cases. Parry Sound has done nothing as yet to protect its citizens and it seems inevitable that an epidemic can be long delayed. I have, with the Provincial Board, for the past two years used every means to get the municipal authorities to act, either by treating their sewage as required by the Public Health Act or by providing filtration for their water supply, but without avail.

Before concluding this report on communicable diseases I would point out that isolation as required under Regulation 4, when the bread winner is permitted to go in and out, seems to me to be impossible except for such time as the patient is ill enough to be confined to bed. After a large number of personal visits to quarantined houses I believe that not more than five per cent. maintain such isolation as would permit the bread winner to go to and from the house. I have, therefore, strongly urged every Health Officer in such municipalities where I have visited, in which some epidemic was in progress, to exclude bread winners from the house entirely.

Water Supplies.

The lake from which North Bay obtains its water supply is gradually being turned into a summer resort with yearly increase in the population. The Board of Health this year brought the matter to the attention of the town fathers and asked that a chlorination plant be established. Mr. F. A. Dallyn, Sanitary Engineer to the Provincial Board, made a visit to the lake upon my request and advised that the present intake and pumping station be removed to a more suitable location. This advice was reported to the council by a committee appointed for the purpose, but nothing has been done up to the present time. The outlook for this water supply does not seem too encouraging, but with chlorination and filtration it might be maintained for say ten years.

Sewers.

A new sewer has been built in the town of Englehart which will in no small way act as a convenience and relieve the hotels of some of the perplexing problems of outdoor privies. I am informed that the town promised to go ahead with a sewage disposal plant, but this has been omitted. The sewage empties into a small creek and from there into one of the rivers with a consequent menace to those below the outlet.

Privies.

The condition of the privies in New Liskeard, Haileybury, Cobalt, Sudbury and Parry Sound is simply deplorable. North Bay has made a serious effort to have all the privies standardized and made fly-proof, with such good results that few, if any, exceptions now exist. Wonderful improvement in regard to the typhoid rate has taken place in cities where the outhouses have been standardized. It would appear almost culpable negligence that municipalities such as the above, notorious as they have been for typhoid, should make so little effort to correct the danger. The next year or two should see much work done along this line.

Slaughter Houses.

Early in May, 1914, I served notice on the owners of slaughter houses in Sturgeon Falls, Sudbury and Parry Sound to make such structural changes in their buildings as would make them meet the requirements of the regulations of the Provincial Board; and to discontinue their use until these requirements were complete. In September of this year, as nothing had been done and the buildings were still in use, informations were laid against three in Sturgeon Falls, five in Sudbury and three in Parry Sound. All were fined and the slaughter houses put out of commission until they were made to comply with the regulations.

Meat Supply.

The supply of meat on the different markets needs very careful supervision. Many animals have not been in fit condition for killing, and many are poorly slaughtered. There is good reason to suspect that many animals, the meat of which is offered for sale, have suffered from disease, which should prohibit the sale of the meat. I have had information of several animals which had *died from disease* being sold in this way, but I have not been able to get evidence that I could use in court, nor is it likely that such evidence will be easily available.

Dairies.

I visited all the dairies supplying milk to Timmins, South Porcupine, New Liskeard, Haileybury, Cobalt, North Bay, Sudbury and Parry Sound. At Timmins and South Porcupine I ordered that cement floors and stanchions be installed during the year. I am glad to report that the same has already been completed. The condition of the dairies in North Bay, Cobalt and Haileybury is reasonably good as regards stables and the technique of handling the product. In one or two cases the bottles are still washed and sterilized by hand, but proper sterilizers have been installed in nearly every case. The quality of the product is, therefore, usually good. In Sudbury some improvement has taken place, but one or two of their dairymen will have to be forced out of commission before their supply will

meet the standards required. The Local Board is aware of this and are taking steps to force these vendors out. I assisted with the prosecution of four milk dealers at this place for selling dirty milk. Mr. James Taylor, their very efficient Sanitary Inspector, is determined to place Sudbury's supply among the best. In New Liskeard one or two of their vendors will have to be forced to sell out before the supply can be greatly improved. These dairymen have been apprised of the feeling of the Local Board and are making strenuous efforts to clean up. Parry Sound milk supply is, on the whole, in very poor hands, and I feel that Provincial Officers will have to go in and assist the Local Board in a campaign for better milk.

I am glad to report that a large number of the towns have secured dirt-testers, and as the value of these tests becomes more evident greater regularity in the application of them will be insisted on; filthy vendors will soon be sorted out and can then be dealt with.

Sanitary Inspectors.

I regret that the tenure of the Sanitary Inspectors has not been made secure or subject to the approval of the Local Board, as several Sanitary Inspectors in my District have been improperly interfered with.

Truant Officer.

In North Bay the Sanitary Inspector has been appointed Truant Officer in order that a strict account of all absentees might be kept and their homes visited in order that hidden cases of communicable diseases will not be overlooked. So satisfactory has been the result that I think the recommendation might be passed on to others who do not think that they can afford a school nurse. It might be pointed out, however, that its success in North Bay has largely been due to the efficiency of the appointee, Mr. Alex. R. White.

Health Exhibit.

The moving picture health exhibit was shown in sixteen municipalities in this District during the past year. The pictures were largely attended and seemed to stir up a degree of enthusiasm in the matters presented that was very gratifying. A short address was given in nearly every town on some interesting health topic.

District No. 7.

As reported last year it has been necessary for me to give considerable of my attention to District No. 7 because of the absence of Dr. Wodehouse in France. I travelled 10,525 miles in this District at a total expense of $169.19. Four extended trips were made through the western part of the District (from Port Arthur west.) Four visits were made to Sault Ste. Marie, three to Little Current and two to Thessalon.

Communicable Diseases.

Typhoid.

A study of outbreaks of this disease was made in Sault Ste. Marie, Little Current, Fort William, and Rainy River. Water supplies have been considered the cause in all cases except Fort William. In fact raw sewage is discharged directly into the supply above the intake by boats at Sault Ste. Marie. For this

reason it is worse in summer. At Little Current water for drinking purposes is being taken out close to the shore where many private sewers empty. They were advised to put in a public intake which would be carried out into the middle of the current, but this work, although promised, has not been done. Fort Frances and Rainy River obtain their water supply from Rainy River. Rainy River is in a particularly dangerous position as Fort Frances and International Falls discharge their sewage into the river above the intake. Kenora takes water from the lake into which they discharge their sewage. They are forced to chlorinate continually and are undoubtedly exposed to greater danger when the wind can carry the usual currents from their regular channels over the intake. Fort William typhoid could not be definitely accounted for, but the large number of open privies, when associated with flies, appeared to me to account for such number of cases as are occurring.

Diphtheria.

An epidemic of this disease broke out in the town of Thessalon, causing a number of deaths. Responsible parties neglected to report cases, so that the disease had spread to considerable proportions before the Mayor brought the matter to the attention of the Provincial Board. Officials, physicians and public were more or less ignorant of their duties, with the result that some lives seemed unnecessarily sacrificed. Had the responsibility been limited to one or two representative parties drastic measures would have been taken. Where cases occurred in the families of the poor and indigent antitoxin for immunization was not used, with the result that others took the disease and died. The supply of antitoxin belonged to the physicians and they did not feel like assuming the cost of supplying the families of the poor and indigent with antitoxin. The proposed action of the Provincial Board to supply this specific free to the public should show a decreased death rate in such epidemics as the above.

Smallpox.

An outbreak occurred in the central Post Office at Fort William. All the staff and the members of their families were immediately vaccinated. Only one subsequently developed the rash, and he was sick at the time. He was immediately isolated from his family.

Water Supply.

I found the Board of Health of the city of Sault Ste. Marie fully alive to the serious danger of their present water supply, and considerable money has been expended in collecting data as to the value and cost of several alternatives. At the present time the quantity of chlorine being added materially lowers the potability of the supply. The typhoid incidence continues to be altogether too high. With the water as the cause it is imperative that a solution be found at the earliest possible moment.

Dairies and Milk Supply.

I have visited all the dairies supplying milk to Fort William, Kenora and Fort Frances. In Fort William the handling of the product is reasonably good, but there is considerable room for improvement in the structural conditions of the stables and the handling of fodder and bedding, in order that dust and manure be kept out of the milk. Samples of milk taken, while showing much improve-

ment, are not as clean as they should be, and samples showing no dirt on the cotton of the dirt-tester are the exception rather than the rule. The dairies of Kenora and Fort Frances were remarkably primitive, while the technique of handling could hardly be described in any other way. Stringent orders were served on the dairymen to have cement floors and stanchions installed during the year, and I am pleased to report that this much has been done in nearly every case. The quality of the milk has shown marked improvement and this has been checked up regularly by the dirt-tester. In order to strengthen the hands of the Local Boards I complied with their requests by giving nearly all such notices myself.

Hogs.

Along with Dr. McCaig, Medical Officer of Health for Sault Ste. Marie, I visited the slaughter house and pens of the Hussey-Ferrier Meat Company and found that they were feeding raw offal to hogs. The company was immediately prosecuted.

Privies.

The privies in Fort William and Port Arthur are so open that the contents are not protected from flies. Efforts are under way in both cities to improve the construction of these outhouses. Something has been accomplished, but there is still a great deal to be done. A system of sewers will no doubt be gradually extended into the coal dock areas, but this permanent cure is somewhat remote.

Manure Bins.

As the danger from open privies is in the fly, strenuous efforts have been made in Fort William and Port Arthur to eliminate the breeding places of these insects. This permits of more rapid advancement than the correction of privy conditions, as the people who own stables are usually able to pay for the construction of proper manure bins, while privies of the dilapidated variety usually belong to the poor. The poor of the cities named were really a charge on the city treasuries during the early months of the war and made any necessary expenditure almost impossible. The results of efforts in regard to handling of manure have been most successful, as *all* the manure in the city of Fort William is now kept in properly constructed bins and a large part of that in Port Arthur has been similarly enclosed. Fort William deserves to be specially mentioned in this regard and serves as an example to other municipalities as to what may be done. The credit belongs to Dr. E. B. Oliver, Medical Officer of Health, and to the Local Board of Health.

DISTRICT NO. 7.

Comprising the districts of Kenora, Rainy River, Thunder Bay, Algoma, Manitoulin and Patricia.

Dr. R. E. Wodehouse, Major Canadian Army Hydrological Corps. On active service. District taken over by Dr. George.

Report of Provincial Sanitary Inspector

GEORGE E. YOUNG.

I beg to submit a report of my work in the lumber and mining camps for the season of 1915 and 1916.

Notify Lumbermen.

Although it is not necessary under the Regulations to notify lumbermen and others who are operating in unorganized territory to send in to the Provincial Board of Health copies of their medical contracts, I have been doing so, after securing their names from the different Crown Timber Agents in the Province.

Owing to the scarcity of men and the disturbance to trade caused by the war, there has been a marked decrease in the number employed in the bush, especially towards the west of the Province.

Total Number Employed.

The number of men in any camp will fluctuate possibly twenty-five per cent. during the season, but my findings of the number employed in the northern country for this season will be approximately 1,500 men.

Information.

During the season I have secured medical contracts—64, medical reports—81, sketches of camps—83, and general information—98. Some of these contracts, medical reports, etc., cover a number of camps.

I have visited camps in the neighbourhood of North Bay, Sudbury, Sault Ste. Marie, Thessalon, Jocko, Wahnapitae, Monteith, Monro, Jacksonboro, Kirkland Lake, Chelmsford, Webbwood, Kearney, South River, Garson, Milnet, Bachawana Bay, etc.

Reports.

As a number of the medical reports were slow in coming in, and some of them being both vague and brief, I had a number of sheets printed with the essential points required by the regulations noted, and which could easily be filled in. These I distributed to the contracting physicians, thereby securing increased information.

Informations.

I laid three informations against lumbermen for not making medical contracts, etc. Two of them complied when summoned, therefore I withdrew the cases, not wishing to put them to expense after I had got results. The other firms were fined for collecting $1.00 per month for four months from the men without having a medical contract or providing medical assistance.

Sickness.

With the exception of some typhoid fever, no sickness of a serious or contagious nature occurred in the camps.

As the steel is now laid throughout on any construction work, the different railways accommodate their men in cars which are moved from place to place, and treated by their physicians at given points.

I have also given attention to the sanitary conditions of the organized districts as to water supplies, dairies, restaurants, etc.

Parry Sound.

At Parry Sound, which I have visited frequently, on account of an epidemic of typhoid, I found that its raw sewage is entering the Seguin River and surrounding waters and, although a chlorinating system has been established, there are still a number of cases occurring. Six of their dairies which I visited were very primitive. These have been improved some, but much is to be desired yet.

Sudbury.

I gave Ramsay Lake and its tributaries, which is the water supply for Sudbury, a very detailed inspection, making a number of recommendations as to sewers, etc., which are being carried out. The Board of Health here have been energetic, their dairies showing a decided improvement, also slaughter houses and rooming accommodation.

North Bay.

At North Bay a trunk sewer has been started. When this work is completed it will cover a great deal larger area than before and do away with about five hundred outside conveniences.

I made a sanitary survey of their water supply at Trout Lake. At the west end where the water is taken there are two mills, several stables, and a number of houses which must drain into the lake. As this is in Widdifield Township I have advised the town to apply for sanitary control of this district at the next sitting of Legislature, as the township is paying little attention to sanitary matters.

Conniston.

The drainage of the West Sub-division of Conniston is very poor. When a moderate storm occurs the yards are flooded. I met the Council of the townships of Neeland and Garson, in which this village is situated. We went into this matter, also the water supply, very minutely. Mr. Dallyn, Provincial Sanitary Engineer, was later called on, when a satisfactory arrangement was reached.

Connaught, Barber's Bay and Keys.

Outbreaks of typhoid fever occurred at Connaught, Barber's Bay and Keys. When I visited these places I found them very unsanitary, in fact I had several houses vacated. The district being unorganized I furnished disinfectants to a number of poor families, had a good clean-up and a number vaccinated by the attending physician. The disease soon abated.

Slaughter Houses.

Accompanied by Dr. George, D.O.H., we visited the slaughter houses at Sturgeon Falls, Sudbury and Parry Sound, where later the Doctor secured several

convictions for neglect of his previous notices. I closed three more at Warren and St. Charles, as being totally unfit, one especially having an accumulation of offal and paunch contents from a season's slaughter.

Typhoid Fever at Milnet.

I visited Milnet on the C. N. Ry. Eleven cases of fever had been reported; on enquiry I found that a carrier from Sundridge had introduced the disease. I found open closets with numerous flies, and other unsanitary matters. After having a clean-up, new closets with iron buckets installed and the employees vaccinated by the contracting physician, the disease disappeared.

Bear Island Measles.

On Bear Island, in Temagami Lake, where 32 families reside, making a population of 136, I found that 45 of the 52 children had measles.

These were so generally distributed that I quarantined the whole island and Friday Point on the mainland. I had a constable appointed to guard the district, and I am pleased to state that no further spread occurred.

I also attended to a diphtheria outbreak at Chalk River, measles at Whitney and Madawaska and visited other little towns or camps on sanitary matters.

Need for Houses of Refuge.

Last winter I found a man claiming to be about 100 years old living in a small shack in unorganized territory; he was sick and without either fuel or food. I had him removed to a neighbour's and cared for until recovered. I have known of a number of similar cases where indigent sick have been a burden on their neighbours. This should not be, as this north country should be provided with houses of refuge for that purpose.

Sweeping Cars.

I notice that when through trains come to divisional points there are men who come in and sweep the floors while passengers are sitting in the seats. This is very unsanitary. I would suggest that suction sweepers be used instead of brooms.

Report of the Provincial Medical Inspector

DR. R. W. BELL.

REPORT *RE* JUNK PREMISES, WINGHAM.

To the Chief Officer of Health, Ontario.

SIR,—Having been directed by you to investigate complaints *re* junk premises of Harry Brown, Wingham, Ont., I proceeded to that town on Wednesday the 12th inst. and, before seeing any of the town or health officials or complainants, visited and looked over the premises situated on the corner of Centre and Maple Streets.

The lot is about a half acre in extent, with a brick residence facing on Centre Street. Back of it along Maple Street is a kitchen with stable abutting against it, between which and a barn used for storage is a narrow driveway into the yard. In the yard and piled around it are several tons of scrap iron of all kinds, also old bottles, etc., and beside the stable door close to the street a small heap of stable manure, scarcely a load. Two or three horses are kept. In the barn I found a large pile of scrap copper, brass, etc., at the end next the street, while the other end was piled high with rags packed in bags (probably two or three hundred) from which there was a heavy, unpleasant odour that certainly would be annoying and disagreeable to near-by residents under different conditions of exposure, atmosphere and wind than existed at the time of my visit, when there was no perceptible bad smell outside except from the small manure pile. I saw no bones nor raw skins about the premises.

Mr. Brown was not seen, but Mrs. Brown and son appeared in the yard and informed me that no bones had been bought or stored for three or four years. They said all rags, etc., were shipped away as soon as there was a car load, but sometimes they were in store several months. They also admitted the storage in the barn at times of fur and other skins, including calf skins, sheep pelts and even skunk skins. They have two single-horse rigs out almost constantly collecting all kinds of junk in which they deal.

I next visited the houses of all residents in the same block and also across both Centre and Maple Streets opposite this block, in all fourteen. In two the occupants were away, one being the nearest to the storage barn and, I was told, the greatest sufferer and most bitter complainant. In one on opposite side of the block an opinion as to the premises was refused, and in one there was no complaint as to bad odours, but there was as to its being a breeding ground for rats. The other ten all denounced the place as a nuisance because of the sickening and at times disgusting odours emanating therefrom, especially when raw and skunk skins were in store, preventing them from enjoying life in their homes. Several complained also of the plague of rats and flies, which they felt certain came from the junk yard.

From my own observation and other reliable information I am of the opinion that the junk business is a most undesirable one in this residential district and is a nuisance and menace to the health of the community.

R. W. BELL,
Provincial Medical Inspector of Health.

Toronto, May 13th, 1915.

REPORT *RE* NUISANCE MAIN SEWAGE DISPOSAL PLANT, TORONTO.

To the Secretary, Provincial Board of Health, Ontario.

Sir,—As instructed by you, I to-day visited the main sewage disposal plant, commonly spoken of as the Morley Avenue plant, in the city of Toronto, complained of as being a nuisance and menace to health.

I first went along the storm sewer on its easterly side from which very little water was discharging, and that comparatively clear. But adjoining it there was much fæcal matter floating in the bay, apparently having escaped through crib work from the beds. As the wind was from the east there was no perceptible odour on this side next the Woodbine Race Course, but on visiting the westerly side of the plant, towards which the breeze was blowing, there was a most disgusting and sickening odour, apparently from the sludge beds, and admittedly by both near-by residents and employees of the plant, frequently very much worse than to-day.

I have no hesitation in pronouncing the complaints as well founded, as the pollution of the atmosphere by this plant cannot help but be a nuisance and menace to the health of the near-by residents who are compelled to breathe it.

Undoubtedly some different method of treating and disposing of the sludge is required, and should be insisted upon without unnecessary delay.

I might here add that I also visited what is known as "Small's Pond," a few yards north of Queen Street in this same locality, and found that most of the water is diverted into the sewer and what remains is becoming stagnant, constituting a nuisance and menace to health, as well as providing a beautiful breeding place for mosquitoes. The attention of the City Health Department should, I think, be also called to this.

R. W. Bell,
Provincial Inspector of Health.

Toronto, May 14th, 1915.

REPORT *RE* SMALLPOX ON SIX NATION INDIAN RESERVE, BRANT COUNTY.

To the Secretary, Provincial Board of Health, Ontario.

Sir,—A request having come from the Department of Indian Affairs, I, as instructed by you, proceeded to the Reserve of the Six Nation Indians in the County of Brant, accompanied by Mr. Gordon J. Smith, Indian Superintendent, on Friday, 15th January inst., to look over and report on the smallpox situation.

This reserve consists of over 43,000 acres and is nearly six by twelve miles in extent. The reserve population is about 4,700, but as many are away and farms leased, etc., the actual resident population is reduced to pretty nearly 3,000 and is well scattered over the reserve. I saw Dr. Davis, the resident M.O.H., at Ohsweken, and with him visited several cases to decide the diagnosis, on which I understand there had been cast some doubt. He informs me the disease has been prevalent on the reserve since October last, he having had sixty-one cases of the discrete type, about a half-dozen of them being severe, but no deaths. Two small houses have been set aside for hospitals or pest houses, but only one so far occupied. At the present time there are thirteen houses under quarantine, with twenty-four cases in

them, and seven in the pest house. I visited a house where I saw three cases—the father and two boys—also the pest house, where I saw seven cases, all adults, all in the final or crust stage, and all undoubtedly smallpox. The remaining cases are scattered over the reserve, and are about equally divided between adults and children. Dr. Davis informs me he has vaccinated about 300, including school children, since the commencement of the outbreak. All residing in quarantined houses have been vaccinated and any other exposed persons so far as they can be found, but still the disease does not seem to be dying out, nor increasing rapidly, but just holding its own. As soon as one house is cleaned up it breaks out in another. All the schools (eleven) were closed for a time, but nine have been reopened. No recently vaccinated persons, that is those done within the last year or two, have developed the disease, but some of the older people vaccinated 40 or 50 years have contracted it. Dr. Davis thinks he can trace several cases to parties coming from infected houses to attend "wakes" which are occasionally held. No doubt the habits of the Indians in wandering about the reserve and visiting from house to house has tended to spread the disease, as there has been no effective quarantine, only two sanitary constables for the whole reserve. The houses are very small, overcrowded and badly ventilated, forming suitable breeding places for the disease, besides being overrun with hundreds of dogs that come directly out of these places after being patted or in direct contact with infected patients and convey the infection in their hair to other persons. I am satisfied the only way the disease can be stamped out is by wholesale vaccination. I would, therefore, recommend that the Department of Indian Affairs should exercise its authority, not only for the protection of the surrounding municipalities but for the Indians themselves, by enforcing the vaccination or revaccination of every resident on the reserve—not allowing one to escape—who has not had smallpox or been successfully vaccinated within the past five years. This should include resident whites, if the Department has control over them.

In the meantime an effective quarantine should be enforced by the appointment of more sanitary police, who will see that the quarantined persons remain within the limits laid down by the Medical Officer of Health, and that others remain out, as there is often more trouble with the latter than the former, and that the police be the only go-betweens for the quarantined premises and the outside, carrying supplies as necessary. These should be men who have had smallpox or been vaccinated; still they should not come directly in contact with the infected patients. They should also see that all dogs are either gotten rid of or chained up until the disease is stamped out.

All suspects, even after vaccination, should be kept under surveillance until the period of incubation is past.

If the quarantine is effective it may not be necessary to prevent public gatherings, but if it is not, then possibly the churches and schools may require to be again closed, and it would be prudent to prohibit the holding of "wakes" in the small, badly ventilated houses until the disease is stamped out.

The books used by children at school from infected houses should be destroyed, as it is almost impossible to satisfactorily disinfect them.

The Medical Officer of Health of the reserve should be provided with a light rubber gown to wear when necessary to enter any of the infected houses, so as to lessen the possibility of conveying the disease to any other house he may have to visit.

The final bathing of the patients, disinfecting and cleaning up of the premises where the disease has existed can, I think, be safely left to the reserve M.O.H.

All of which is respectfully submitted.

R. W. Bell,
Provincial Inspector of Health.

January 18th, 1915.

REPORT *RE* ABATTOIR NUISANCE, WEST TORONTO.

To the Provincial Board of Health, Ontario.

Having been instructed to investigate a complaint in respect to foul odours from sewers in West Toronto, we to-day visited the manholes at several points, viz., corner Annette Street and Indian Crescent, thence along Annette Street, High Park Avenue, Vine Street and Keele Street to Dundas Street. At all of these manholes at short range (10 or 15 feet westerly) a distinctly characteristic abattoir odour was discernible. At the corner of Keele and Dundas Streets the odour was perceptible over a much greater area. From further investigations of the abattoirs of the Harris Abattoir Co., Limited, Gunns, Limited, and the Swift Canadian Co., Limited, we are of the opinion that these odours are due to discharge from the said abattoirs into the city sewers. To persons in the immediate neighbourhood the foul smell would certainly constitute a nuisance and menace to health.

We have the honour to be,

Your obedient servants,

(Signed) R. W. Bell,
John A. Amyot.

January 22nd, 1915.

Report of the Provincial Sanitary Engineer

F. A. DALLYN, B.A.Sc. C.E., (Tor.)

To the Chairman and Members, Provincial Board of Health, Ontario.

GENTLEMEN,—I have pleasure in presenting herewith my Annual Report for the year 1915, together with several reports of the chemist in charge of the experimental station, Mr. A. V. DeLaporte, B.A.Sc., made under your direction.

APPLICATIONS *re* SEWERAGE AND WATERWORKS.

Applications for the approval of the Board in matters relating to sewerage and water works systems and extensions thereto are now forwarded by nearly all municipalities contemplating work of this character. The estimated cost of the work thus submitted, reported upon and approved, amounted in the year 1915 to the sum of $4,679,496.94 subdivided as follows:

Supplies and new water systems, 6 applications approved, estimated cost..	$637,286 82
New water purification works, 5 applications approved, estimated cost.....	199,950 00
Extensions to existing water works, 80 applications approved, estimated cost	995,130 72
Sewage disposal systems, 3 applications approved, estimated cost.....	91,180 13
Extensions to sewerage systems, 192 applications approved, estimated cost..	2,755,949 27
Total of applications, 286; Total estimated cost.....	**$4,679,496 94**

The approvals issued are shown in detail in Appendix "1."

The engineers' estimates of cost of the various works proposed, together with the sanitary aspect and effect of the work, have received considerable attention, and it appears that a great deal of good and some economy can be brought about by systematic co-operation between municipal engineers, clerks of work and works commissioners throughout the Province. Mr. H. W. Tate, B.A.Sc., was appointed in April, 1915, to assist your engineer in a consideration of this important matter, and some work was done in the preparation of forms for cost keeping and in preparing a standard specification for the construction of sewers and laying of water mains. Unfortunately this work was not completed before Mr. Tate accepted a Commission with the Second Pioneer Battalion, C.E.F.

VITRIFIED TILE SEWER PIPE.

The quality of vitrified sewer pipe manufactured in Ontario has been complained of on numerous occasions, mainly on the ground that the product of the various Ontario factories was not interchangeable, the size of the bell or socket being frequently too small or so deformed that it could not receive the spigot end of a pipe of another manufacture. In some instances municipalities dividing their orders found that tile of different manufacture was best kept in separate yards so as not to appear together on a job.

I am satisfied the Board is amply warranted in making an enquiry into the manufacture of vitrified clay pipe in Ontario and in endeavouring to standardize the size of tile, for these reasons: (1) the demand for a high-grade vitrified clay

sewer pipe is bound to increase year by year; (2) an industry is already established in Ontario and capable of future development; (3) the City of Toronto is now a large user of vitrified clay sewer pipe manufactured in Ontario and secures an excellent product; and (4) the smaller municipalities, having little or no inspection, to a very large extent absorb pipe manufactured for and rejected by the larger consumers such as the City of Toronto. Sewer pipe continues to be imported into the Province in considerable quantities, the importation being:

	Great Britain.	United States.
1911 . . .	$3,150 00	$31,742 00
1912 . . .	3,584 00	53,867 00
1913 . . .	15,398 00	72,679 00
1914 . . .	4,747 00	81,194 00

An outcome of such enquiry would be to direct the attention of manufacturers and to incite enquiry among ceramic engineers to such matters as the mixing of local clays to increase the range of vitrification, the drying and screening of clays, the drying of pipe before burning and the construction and firing of kilns: all of which would tend to establish an Ontario product of excellent character.

Abolition of the Unsanitary Privy.

Educated public opinion on matters such as the control of infant mortality, civic betterment, abatement of the fly nuisance and municipal economy itself now supports the growing demand for the abolition of the unsanitary and unsightly outdoor privy and its incident expensive night-soil collection. With the exception of certain unprogressive and unpatriotic elements of society, together with those whose self-interest does not harmonize with motives of civic improvement, all are agreed that in the cities, towns and villages where sewer systems are in operation habitable premises should be connected thereto. Sewerage facilities can, without exception, be given by the construction of branch laterals, draining either into the main system by gravitation or to small electrically equipped manhole pumping stations and thence discharged through a force main. Such stations, which seldom cost more than two thousand dollars ($2,000) when completely equipped, are capable of providing for drainage from large areas.

House Connections to Sewers—Lack of Record.

It is a matter of congratulation that under the authority of Sec. 25 (s.s. 6) of the Public Health Act a great deal has been accomplished in this direction during the past year. A further amendment of the section so as to make it read "the Local Board of Health of any municipality" would be of considerable advantage to the towns and villages who find themselves somewhat handicapped by lack of legislation in this matter. I regret to report, however, that in many municipalities no record is being kept either of the number of sewer connections or of the number of outside privies and with few exceptions the location of outhouses and premises not connected to sewers is not definitely known. This information should be in the possession of both the City Engineer and the local medical officer of health. I would strongly recommend that the Board require the local medical officer of health to report annually (1) the number of unsewered premises in the municipality; (2) the number of houses erected during the current year; (3) the number of connections made to sewers during the year; (4) a statement as to the premises which can be connected to existing sewers.

Local Improvements, Sewers and Permanent Pavements.

In future development of residential areas I am firmly of the opinion that the laying of sanitary sewers should have precedence over other local improvements. Unfortunately, some municipalities do not fully realize the importance of this, and we find towns, like Ingersoll for example, proceeding with permanent pavements before providing sewers. This is surely a mistake and one which will ultimately increase the tax burden of the municipality. In view of the fact that only the smaller municipalities are involved I would recommend that the duties of this office be somewhat broadened to provide for furnishing of engineering services limited to preliminary surveys and estimates for sewerage purposes, and would strongly urge upon the Board the advisability of increasing the use of their mandatory powers. In such instances it is also believed that the usefulness of this office would be greatly enhanced if municipalities were made to realize that all such services are supplied by the Board without cost to them, in the interests of public health and civic betterment.

I have no doubt that it is the problematical cost of sewage treatment which deters most of the now unsewered municipalities from proceeding with the laying of sewers. A general realization that the cost of plants for sewage treatment is frequently very much less than, and seldom exceeds, $30,000 to $40,000 capital expenditure, per million gallons to be treated daily, would encourage these municipalities to proceed with sewerage systems. Thus, a plant designed to treat 100,000 gallons per 24 hours would cost from $4,000 to $6,000.

Fire Protection Systems, Their Possible Development.

I beg to report that with the advance which has been made in water purification in the last ten years there is no reason for the continuance of systems in which water mains have been laid and pumping stations built for the sole purpose of fire protection, when, by the installation of suitable purification works and a very little additional expense chargeable to sanitation, the water may be used for domestic purposes. The works, which in a few cases now derive their sole returns from water supplied to the railway tanks in their vicinity, will then become revenue-producing. The principal objection to the continuance of the fire protection system is that, with the advance of education and the general prosperity of the rural portions of the Province, there is an increasing demand for sanitary conveniences of the modern flushing type in the houses. In many such centres connection has been had to fire protection mains for the purpose of operating sanitary conveniences: the use of the water for sprinkling the lawn and in the kitchen for laundry purposes naturally follows. Faucets are then exposed from which uninformed or careless persons draw water for drinking purposes. In some instances intakes for fire protection have been found taking water which is seriously polluted by the drains of hotels using the fire protection system to operate their flush closets.

Disinfection of Water Supplies.

The use of chlorine and hypochloride of lime for the protection of water supplies has been continued throughout the year in many centres and without complaint to the Board. Liquid chlorine is now beginning to replace hypochloride of lime in many of the installations which were first operated by using bleaching powder. The apparatus for administration of liquid chlorine has been so greatly

improved in the past year that, I believe, in 1916 apparatus will be on the market which will be safe for use in any pumping station with any ordinary pump operator's supervision checked by periodical laboratory analysis of water samples and inspection by the local Medical Officer of Health.

Incinerators.

Several applications for construction of incinerators were received and it is hoped that a more general use of this means of disposing of garbage will be made in the near future. With careful operation of the incinerator the cost of disposing of a ton of garbage can be kept as low as from 50 to 75 cents (including overhead charges). A summary of returns in regard to the collection of garbage shows that for the systems now in operation in Ontario one-half to one ton of

Sprinkling filter at Stratford, Ont. (in winter.)

garbage daily per thousand of contributing population is a reasonable quantity to provide for. The garbage collected will usually be burnt in a 10-hour day. Dumping grounds should not be required to take care of other than ashes, leaves and excavations from cellars, which material may also be used with advantage for filling in low areas, improving the grade of gardens and other purposes.

Co-operation Needed Between Officials of the Various Municipalities.

In concluding my report I should like to emphasize the need of co-operation between the numerous officials of the various municipalities throughout the Province. The efforts now being made by the Hydro-Electric Commission (Municipal Electrical Association), the Ontario Municipal Association and the Ontario Health Officers' Association, are not co-ordinated and the several meetings are held at

different times. The city engineers of the Province are now dealing with upwards of $10,000,000 of expenditure annually, and have no active association where at annual conference matters of municipal management can be freely discussed with an informal interchange of ideas and cost data. An amalgamation or a joint annual meeting of these associations and of the suggested conference of city engineers at a convenient period (possibly a session of four days in Toronto at or prior to the holding of the Canadian National Exhibition), with papers covering matters of public health, town planning, municipal finance and civic betterment for combined meetings, would, I believe, be practical and should promote a large attendance, especially when municipalities perceive the advantage of requiring the attendance of and paying the expenses of their several delegates.

New Water Supplies, 1915.

Municipality.	Date of Approval	Municipality.	Date of Approval
Ford City	April 10	Markham	July 10
Hespeler	June 18	Norwich	Feb. 23
Mimico	Oct. 19	Ottawa	May 12

Water Purification.

Brockville	Dec. 15	Port Hope	May 12
Dundas	Aug. 10	Sudbury (Chlorine Apparatus)	Mch. 5
Perth	" 6		

Waterworks Extensions, 1915.

Aurora	Dec. 16	Midland	Dec. 3
Brampton	Mch. 10	Meaford	April 6
Brampton	Oct. 27	Matheson	June 5
Bracebridge	May 22	Newmarket	Feb. 10
Belleville	Mch. 15	Orillia	June 14
Belleville	" 15	Oshawa	Jan. 13
Belleville	" 15	Ottawa	Sept. 4
Beamsville	June 14	Owen Sound	Oct. 1
Cochrane	Dec. 10	Palmerston	Nov. 5
Fort William	July 12	Parry Sound	Feb. 20
Fort Frances	May 25	Parry Sound	" 23
Fort Frances	Aug. 23	Pembroke	" 9
Fort Frances	Oct. 2	Pembroke	Sept. 25
Guelph	May 1	Peterborough	Feb. 19
Guelph	June 15	Preston	Oct. 27
Goderich	May 19	Renfrew	Nov. 3
Gravenhurst	Aug. 9	Renfrew	" 18
Hamilton	April 24	Stratford	Aug. 16
Hamilton	May 10	Smith's Falls	April 21
Hamilton	June 7	Smith's Falls	June 29
Hamilton	" 29	Smith's Falls	" 29
Hamilton	Aug. 23	Stamford Township	Aug. 4
Hamilton	Sept. 24	St. Thomas	" 13
Hamilton	Oct. 14	Sandwich	Feb. 4
Hamilton	Dec. 7	Sarnia	Nov. 30
Huntsville	June 25	Sandwich East	June 9
Kingston	Dec. 1	St. Catharines	Feb. 7
Lambeth	Sept. 27	St. Catharines	June 23
Lambeth	Nov. 18	Sault Ste. Marie	Sept. 13
Little Current	June 16	Toronto	Mch. 5
Lindsay	May 22	Toronto	" 11
Mimico	June 29	Toronto	April 9
Midland	" 2	Toronto	" 30
Midland	Oct. 4	Toronto	May 10

WATERWORKS EXTENSIONS, 1915.—*Continued.*

Municipality.	Date of Approval
Toronto	June 15
Toronto	July 27
Toronto	Aug. 18
Toronto	Sept. 30
Toronto	Oct. 28
Toronto	Dec. 6
Waterloo	Mch. 4
Welland	Jan. 9
Welland	June 1
Weston	Mch. 3
Wingham	Oct. 27
Windsor	July 28

SEWAGE DISPOSAL.

Burlington (System and Disposal Works)	May 11
Mimico	June 14
Waterloo	July 24

SEWERS, 1915.

Amherstburg	June 9
Aurora	Dec. 16
Berlin	Aug. 24
Berlin	" 24
Berlin	Sept. 8
Berlin	Nov. 4
Berlin	" 19
Berlin	Dec. 22
Bertie Township	Oct. 1
Belleville	May 21
Belleville	Feb. 22
Belleville	Oct. 16
Brampton	Mch. 4
Brampton	June 19
Brockville	Jan. 9
Chatham	May 1
Chatham	Nov. 30
Dunnville	Mch. 27
Dunnville	June 21
Embrun	Dec. 9
Fort William	Jan. 21
Fort William	Feb. 3
Fort William	" 10
Fort William	Mch. 23
Fort William	May 4
Fort William	July 12
Fort Frances	May 17
Fort Frances	Aug. 23
Fort Frances	Nov. 9
Guelph	Feb. 10
Guelph	Mch. 29
Guelph	May 25
Guelph	June 22
Guelph	July 14
Guelph	Dec. 10
Goderich	Oct. 16
Goderich	Nov. 22
Galt	Jan. 11
Galt	" 11
Galt	Mch. 11
Galt	July 14
Galt	Aug. 4
Galt	Oct. 1
Galt	Nov. 13
Hamilton	Feb. 24
Hamilton	Mch. 11
Hamilton	April 1
Hamilton	" 21
Hamilton	June 7
Hamilton	Aug. 5
Hamilton	Sept. 21
Hamilton	Oct. 6
Hamilton	" 18
Hamilton	" 28
Hamilton	Nov. 4
Hamilton	" 18
Kingsdale	Mch. 9
Kingston	July 12
Kingston	Nov. 8
Lindsay	Feb 19
London	Jan. 6
London	April 28
London	May 27
London	" 29
London	Aug. 4
London	" 4
London	" 4
London	" 28
London	Oct. 27
London	Nov. 19
London	Dec. 7
Mimico	June 14
Mimico	Sept. 14
Mimico	Oct. 19
Niagara Falls	Mch. 1
Niagara Falls	July 5
Niagara Falls	" 23
Nipigon	April 6
North Bay	Sept. 11
North Bay	" 11
North Bay	Nov. 8
Oakville	Oct. 9
Oshawa	Jan. 13
Oshawa	Nov. 3
Ottawa	Feb. 19
Ottawa	" 26
Ottawa	" 27
Ottawa	Mch. 23
Ottawa	April 17
Ottawa	" 21
Ottawa	" 28
Ottawa	" 29
Ottawa	May 4
Ottawa	" 5
Ottawa	June 14
Ottawa	" 14
Ottawa	" 17
Ottawa	" 17
Ottawa	July 14

SEWERS, 1915.—*Continued.*

Municipality.	Date of Approval
Ottawa	Aug. 6
Ottawa	Aug. 17
Ottawa	" 17
Ottawa	" 17
Ottawa	" 17
Ottawa	" 17
Ottawa	" 19
Ottawa	" 19
Ottawa	Sept. 20
Ottawa	" 20
Ottawa	" 20
Ottawa	Oct. 9
Ottawa	Nov. 5
Ottawa	Dec. 10
Parry Sound	Nov. 24
Pembroke	July 17
Pembroke	Aug. 9
Penetanguishene	Jan. 13
Perth	April 8
Perth	Aug. 3
Peterboro	May 5
Peterboro	July 7
Peterboro	Nov. 23
Preston	May 31
Sandwich	Feb. 22
Sandwich	Sept. 17
Sandwich	Oct. 14
Sandwich	Oct. 20
Sandwich	Nov. 18
Sarnia	July 17
Sarnia	Nov. 26
Simcoe	Aug. 13
Smith's Falls	April 21
Smith's Falls	June 29
St. Thomas	May 8
St. Thomas	Sept. 2
St. Catharines	Aug. 17
Stratford	Feb. 17
Stratford	April 6
Stratford	July 12
Stratford	July 12
Stratford	Nov. 2
Stratford	" 2
Stratford	" 2
Sudbury	Jan. 15
Sudbury	July 15
Sudbury	" 29
Thorold	May 21
Thorold	June 29
Thorold	July 27
Thorold	" 28
Thorold	Oct. 14
Thorold	Nov. 22
Toronto	Jan. '27
Toronto	Feb. 4
Toronto	Mch. 16
Toronto	May 5
Toronto	" 14
Toronto	" 14
Toronto	June 29
Toronto	Aug. 9
Toronto	Sept. 23
Toronto	Oct. 8
Toronto	Nov. 27
Waterloo	July 24
Waterloo	Sept. 23
Welland	May 22
Welland	Dec. 4
Windsor	Jan. 18
Windsor	April 10
Windsor	July 3
Windsor	Oct. 9
Windsor	Aug. 27
Windsor	Nov. 19
Wingham	Sept. 23
Woodstock	Dec. 3
York Tp.	May 5
York Tp.	" 21
York Tp.	" 25
York Tp.	" 31
York Tp.	July 12

PLACES VISITED IN 1915.

Jan.	20	Toronto	....Brockville.
"	20	"	....Ottawa.
Feb.	8	"	....Burlington
"	8	"	....Port Colborne.
"	26	"	....Georgetown.
Mar.	18	"	....Oakville.
"	22	"	....Sarnia.
"	26	"	....Peterboro.
"	30	"	....Berlin, Hespeler, Guelph Toronto.
April	7	"	....Brampton.
"	12	"	....Grimsby.
"	23	"	....Buffalo.
"	24	"	....Renfrew.
"	24	"	....Arnprior.
May	12	"	....Woodstock.
"	13	"	....Orangeville.
"	18	"	....Pt. Dalhousie.
"	20	"	....Detroit.
"	25	"	....Peterboro.
May	28	Toronto	....Berlin.
June	25	"	....Elgin House (Muskoka).
"	23	"	....Sarnia.
"	21	"	....Aurora.
"	30	"	....Niagara-on-the-Lake.
"	9	"	....North Bay.
"	10	"	....Sudbury.
"	10	"	....Little Current.
"	12	"	....Cutler.
"	12	"	....Toronto.
July	13	"	....Kingston.
"	6	"	....Whitby.
"	21	"	....Hamilton.
"	27	"	....Brockville.
"	29	"	....Guelph.
Aug.	1	"	....Detroit.
"	10	"	....Port Hope.
"	10	"	....Niagara Falls.

PLACES VISITED IN 1915.—*Continued.*

Aug.	13	Toronto	....Waterloo.	Sept.	6	Toronto	....Gloucester.
"	13	"	....Guelph.	"	6-7	"	....Boston.
Sept.	5-6	"	....Worcester.	"	6-7	"	....New York.
"	6	"	....Fitchburg.	"	6-7	"	....Ottawa.
"	6	"	....Lawrence.	"	6-7	"	....North Bay.

REPORT RE TANNERY AT AURORA

Dr. J. W. S. McCullough, Chief Officer of Health, Toronto.

SIR,—This factory handles calf skins only and uses the chrome tan process. The present capacity of the plant is approximately 600 large skins or 800 small skins per day. The large skins will range from 15 to 25 lbs., and the small skins from 8 to 15 lbs., or less. The process requires a skin to be in the tannery some twenty-one days before going to the shipping room.

The water consumption appears to be 200 gallons per minute for a 10-hour day, or a total of 55 hours per week. The waste may be estimated at 120,000 gallons per day. This liquor is discharged, however, in a continuous stream and augmented from time to time by the discharge of vats, 6 feet by 6 feet by 6 feet. Usually four fresh-water pits and four lime pits are discharged per day. This discharge will contain about five bushels of spent lime per day. The chrome is discharged once a week and amounts to 1,000 gallons. The amount of dye-stuffs used appears to be 150 lbs. of colour and 100 lbs. of black per week, and about 150 lbs. of chrome are used per day.

Under existing conditions four drains are carried from the pits to the outside of the building and there collected in a trough and led to their improvised sedimentation tanks. The wash water is also collected into this drain. The existing sedimentation tanks are three in number, two of which are 12 feet by 6 feet by 8 feet deep; the third is 8 feet by 12 feet by 8 feet deep. These are operated in series, the final discharge going to the creek which afterwards flows through the municipality of Aurora. With careful operation it seems improbable that the stream would be polluted in such a manner as to give rise to odours. Under careless management, however, large amounts of hair, organic matter and pieces of skin, as well as quantities of lime, find their way from the sedimentation tanks to the creek. This matter lodges along the banks and putrefies and gives off foul odours as the water recedes. The greater portion of this putrescible matter can be settled out of the tannery effluent before discharge to the creek. The existing tanks are awkward to clean and require considerable attention, and many tons of detritus have to be removed from them annually. Laxity on the part of the tannery in removing this matter results in the tanks filling up in the course of a few days and discharging solid matter freely into the creek.

It is suggested that the tannery should construct a large sedimentation tank at least 30 feet long by 12 feet wide by 8 feet deep, built of concrete, that solids be removed from the tanks by pumping on to adjacent land, and that all the wastes from the factory be required to pass through the tank before entering the ditch. The officers should be instructed that the final compartments of such tank will have to be kept clean to release them of any liability of polluting the creek. The Medical Officer of Health of the municipality should instruct his Sanitary Inspector to periodically examine the compartments of the tank to see that the requirements of the Board are being carried out.

The following analyses made at the Experimental station are of interest in connection with this disposal scheme.

SIR,—Following out your instructions, the effluent water received from the Collis Leather Manufacturing Co., of Aurora, Ontario, was examined as follows:—

1. The sample was stirred up so as to give an intimate mixing of the liquid and the solid particles. A composite sample of one litre was taken and an analysis made of the mineral content.

TABLE 1.—MINERAL CONTENT OF A COMPOSITE SAMPLE.

Total solids	3,044.0 ppm.
Loss on ignition	1,685.0 "
SiO_2	0.0 "
SO_3	91.1 "
Cl	88.5 "
$CaSO_4$	0.0 "
Fe_2O_3	41.0 "
Al_2O_3	28.0 "
Cr_2O_3	6.0 "
MgO	34.0 "
CaO	467.0 "
Na_2O K_2O	316.0 "
CO_2	561.7 "

2. The sample was allowed to sediment for fifteen minutes and a litre sample of the supernatant liquor was taken and analyzed.

TABLE 2.—SAMPLE SEDIMENTED FOR 15 MINUTES, SUPERNATANT LIQUOR.

Total solids	2,218.5 ppm.
Loss on ignition	706.0 "

3. A quantity of the sample was taken and filtered through a Buchner funnel and filter paper and a litre sample of the filtrate was taken for analysis. The filtrate was a decided yellow colour.

TABLE 3.—SAMPLE AFTER FILTERING THROUGH FILTER PAPER.

Total solids	2,046.5 ppm.
Loss on ignition	272.0 "
SiO_2	0.0 "
SO_3	91.1 "
Cl	88.5 "
Fe_2O_3	19.5 "
Al_2O_3	17.0 "
Cr_2O_3	4.0 "
MgO	43.2 "
CaO	164.0 "
Na_2O,K_2O	630.0 "
CO_2	514.0 "

4. Some cream of alum was stirred up with a portion of the water, and, after standing for a while, the liquor was filtered off through filter paper and Buchner funnel. The colour of the filtrate was not appreciably changed from that of No. 3.

TABLE 4.—SAMPLE AFTER TREATMENT WITH ALUM, FOLLOWED BY FILTRATION.

Total solids	1,907.5 ppm.
Loss on ignition	255.0 "

FRED. W. WARD,
Assistant Chemist.

You will note from the above analyses that the lime content of this waste is sufficient to effectually sterilize any organisms leaving the plant; to take advantage of this, all that is necessary is to require sufficient storage and an intimate mixing of the liquors as they enter the tank.

All of which is respectfully submitted.

F. A. Dallyn,

Provincial Sanitary Engineer.

Toronto, May, 1915.

REPORT RE BERLIN SEWAGE DISPOSAL

Sir,—Acting under instructions from the Provincial Board of Health, an examination was made into the condition of Schneider's Creek on March 30th, 1915. It was found that raw sewage was being discharged directly into the creek in such quantity as to give rise to nuisance, and that such nuisance is prejudicial to the interests of the Township of Waterloo, and that at German Mills considerable interferance with the industry of the flour mill is experienced.

The existing works, with the exception of 3.03 acres of filter beds, were completed in 1906, at which time the population of the municipality was 12,151. The present population, according to the 1913 census, last available, is given at 16,917.

The records of the sewage pumping station show that the kilowatt hours electrical current consumption was as follows:—

1914.	
March	8,990
April	12,100
May	10,540
June	14,370
July	12,380
August	13,010
September	11,540
October	10,670
November	7,280
December	9,770
1915.	
January	11,420
February	10,150
March (to March 29th)	11,551

The average for the year (March, 1914, to February, 1915) is 11,020 kilowatt hours per month, equal to 14,770 horse-power hours. The maximum occurred in June, 1914 (14,370 kilowatt hours), and the minimum in November, 1914 (7,280 kilowatt hours).

From the kilowatt consumption some estimate can be made of the probable quantity of sewage lifted to the upper beds. The induction motor and centrifugal pump in use will probably have an over-all efficiency of 45 per cent., 92 per cent. for the motor and 50 per cent. for the pump. The actual work performed in lifting water for the average month equals about 221.4 horse-power hours per day; assuming the total lift is 70 feet, this means 626,400 imperial gallons per day.

Mr. Edward Eby, the caretaker who was in charge of the beds, said that 6 inches was applied every third day to each bed, and that this had been the practice for the last several months. Calculating the quantity from this information, it appears that 766,708 imperial gallons were treated on the upper beds per 24 hours. The true quantities will lie between these figures. The beds are probably being

operated at the rate of 42,000 gallons per acre per day. The total quantity of sewage received at the works is somewhat problematical.

In 1899	225,000	gallons per 24 hours	was the estimated flow.
1901	327,000	" "	" "
1903	414,000	" "	" "
1906	680,000	" "	(actual measurement).
March, 1915	2,000,000	" "	computed from the discharge of the pumps and the re-establishment of the levels in the storage tanks.

I am of the opinion that 2,000,000 gallons will not be far out for the 24 hours' flow. Not only has the population increased considerably since 1906, but the number of house connections has materially altered for the older portions of the system; naturally, in the newer sub-divisions all the houses are connected.

It would appear, then, that of the total amount of sewage received 600,000 to 700,000 gallons were treated on the upper beds, leaving a balance of at least 1,200,000 gallons to be treated elsewhere.

In 1901 the old beds on the same level as the pumping station had an area of about 10·41 acres, and were capable of handling 300,000 gallons per day. These beds are now required to handle 1,200,000 gallons, for which duty they are entirely inadequate.

The Sewerage Committee, of which Mr. J. Hessenmaur has been chairman for 1914 and 1915, reported that effort had been made to keep up the banks between the beds of the old farm. On the day of my visit, March 30th, 1915, the banks were badly broken in three places, permitting a heavy discharge of sewage into Schneider's Creek. This discharge was then at its minimum, since practically all the sewage was being pumped to the upper beds, and only sewage at the rate of about 200,000 gallons per 24 hours was being by-passed from the last manhole directly to the lower beds. The night flow and early morning flow would be entirely directed to Schneider's Creek under these conditions. An effort was made to discover the exact conditions at the flour mill at German Mills. Owing, however, to the fact that the ice had broken on the creek, permitting the escape of the dissolved gases, very little odour was perceptible on the water-wheel of the mill. This odour, I believe, would be very objectionable in the early morning and during the winter, when the maximum flow of sewage would be received under the most disadvantageous conditions.

There appears to be no question but that the present method of operating the sewage disposal works can only result in the creation of a nuisance in Schneider's Creek.

The area available for treatment of the sewage on the intermittent sand filters at the existing rates of operation will not permit of the treatment of more than one-third of the sewage received. The actual conditions are very much worse than those existing in 1901 and 1903, which forced the municipality to construct their present system of beds. Some method must be devised to provide for the abatement of the nuisance and to keep this sewage out of Schneider's Creek, which has a very small flow during the summer (estimated by Dr. Amyot and the engineer in 1903 as 1,000,000 gallons per 24 hours). At present the flow is considerably more than this.

It is a question whether the purchase of more farms and the construction of further filter beds is advisable. The plant has now become very large, and any interruption of the proper management gives rise to considerable odour in the vicinity of the public highway running past the farms. A consideration of some of the other methods of sewage disposal might result in advantage, especially in view of

the fact that the winter operation of the sand beds is very difficult not only to supervise but in maintaining the beds in proper condition. The temptation to by-pass the sewage into Schneider's Creek will always exist as long as the sewage is to be pumped to disposal areas.

The annual cost of pumping at present is in the neighbourhood of $1,300. Their pumping equipment requires two 50 horse-power induction motors, making the horse-power cost per year about $16.80. The pumps are apparently operated 4.92 hours per day. To handle the flow of sewage at present received at the plant they should be required to operate about 14 hours per day.

The upper beds are inadequate to handle the flow. There seems to be no reason whatever why the upper beds should not receive sewage at the rate of 80,000 to 100,000 gallons per acre per day during the summer. This means that each bed will receive about 12 inches of sewage every third day. The beds will require to be cleaned perhaps oftener than once in three weeks when this flow is applied. Some provision should be made by which the clogged bed can have the surface water by-passed to one of the other beds, for when once a bed has become clogged several days or even a week may be lost in waiting for it to drain off.

The storage in the septic tanks primarily installed to take care of the tannery refuse is now about three hours.

The township reports that the stream again shows blackening. This was noticeable in 1902 and reported as due to a fine precipitation of tannates, etc. Liquor which had been septicized for 24 hours did not show this phenomenon. It may be necessary, therefore, in considering the condition of the stream, that further septic tanks be installed at the tanneries in order to provide this necessary storage. The whole question requires to be examined into and reported upon by a competent engineer.

Memorandum.

Charles Myers, engineer at the pump house, reported that the tanks after rains and on Mondays, Tuesdays and Wednesdays rose from 1½ to 2 feet per hour, each foot being equal to 66,276 imperial gallons. In the evenings, from 4 to 9 o'clock p.m., the tanks rose at a rate of from 1 to 1½ feet per hour. The tanks were always running over in the morning. This discharge went on the beds, broke the banks and flowed directly into the creek.

Edward Eby, caretaker in charge of the beds, lives at the works. He reported that he had been five years on the sewage farm and that at present he applies 6 inches every third day on each bed and that this sewage disappeared in about 36 hours. In winter the beds then froze and cracked before the next dose was applied. The beds were all ridged up March 30th, and in good working condition. Mr. Eby reported that the beds were ridged in November, 1914, and have not been cleaned since that date.

The area of the upper beds, elevation 50 to 70 feet above the pumping station, is 16.59 acres = 738,000 square feet, 6 inches deep = 369,000 cubic feet.

The old beds adjacent to the pump house have a total area of 10.41 acres 6″ deep, = 22,675 cubic feet.

Pump House Equipment.

Induction Motor.—Type I. Class 10-50-720. Form K. Horse-power 50, cycle 60. Volts 2,080, amperes 14, speed 70. Canadian General Electric, Peterboro, No. 4,408. Efficiency probably 92 per cent. Driving 8-inch pump, No. 05,170. Canada Foundry 720 r.p.m.

Second Motor.—No. 4,510, speed 720, horse-power 50. Driving 8-inch pump, No. 05,171.

Sludge Pump.—6-inch sludge pump, No. 05,172 Canada Foundry, is belt-driven from No. 1 motor at 720 r.p.m.

Elevation of pump house at pumps.—86.

Elevation of filters.—Maximum, 152; minimum, 132.

Tanks last cleaned.—April, 1914.

Beds ridged.—November, 1914.

Current obtained at 1c. per horse-power hour.

Meter readings multiplied by 10 = kilowatt hours.

One kilowatt hour = 1.3405 horse-power hour.

Rated Capacity of Pumps.

One thousand imperial gallons per minute discharging through 2,000 feet of 14-inch pipe and static head of 75 feet, running 720 r.p.m. and using 50 h.p.

Effective,	full	load	87	Power factor,	full	load	87
"	¾	"	87	"	¾	"	87
"	½	"	85	"	½	"	82
"	1½	"	85	"	1½	"	88

Allis-Chalmers (Report to P.B.H., 1915.)

F. A. Dallyn,

Provincial Sanitary Engineer.

LETTER RE NEW EXTENSION.

Dr. J. W. S. McCullough, Chief Officer of Health, Toronto.

Sir,—Acting under your instructions I visited the sewage disposal plant at Berlin on November 29th, in company with Dr. McNally. The new extension to the sewage disposal plant is well under way, the lower chambers of the settling tanks are finished and the sprinkling filter is in course of construction. The work had, however, been stopped on the plant for the winter at the time of my visit. It is estimated that it will take at least two months after recommencement of the work to complete the structure.

At the time of my visit there was only a trickle of sewage escaping untreated to the river. At night, I was informed, between 200,000 and 300,000 gallons were allowed to escape to the river untreated, due to the fact that the pumps are not operated after six o'clock p.m. This could and should be prevented by having the pumps run at night. At present they were pumping about 900,000 gallons per day on to the sand beds, which most assuredly had not the appearance of being overworked.

All of which is respectfully submitted.

A. V. DeLaporte,

Chemist in Charge of the Experimental Station.

Toronto, Nov. 29th, 1915.

REPORT RE TYPHOID FEVER IN BROCKVILLE

Dr. J. W. S. McCullough, Chief Officer of Health, Toronto.

Sir,—I beg to report that, acting under your instructions, I visited the town of Brockville on January 19th and examined into the possibility of the water supply being the cause of the present epidemic of typhoid fever there.

I beg to say that the present source of water supply is seriously contaminated by the sewage of Brockville itself. Probably the most serious trouble is from a large sewer which empties a considerable distance above the water works intake, together with periodic discharges from storm overflows, which are also located above the intake. This condition is further augmented during navigation season by boats continually passing and manoeuvring in the vicinity of the intake.

At the time of my visit to the water works pumping station I found that the administration of bleaching powder, which had been ordered by the Medical Officer of Health, was interrupted. The pump attendant made the assertion that this interruption had taken place only for a few moments. Unfortunately, interruptions, which are made possible by the lack of adequate apparatus, must result in contaminated water not receiving its proper dose of disinfectant.

After carefully considering the situation, I believe the Board would be justified in urging most strongly the immediate installation of filters to protect this water supply. I am quite convinced that chlorination cannot be used effectively to protect it from their own sewage contamination. Doubtless, mechanical filters will be recommended by their engineers, and I believe can be approved by the Board in this situation.

At a meeting of the Mayor, several councilmen and some members of the Water Works Commission, together with the Medical Officer of Health and Dr. Moloney, it was suggested that the Mayor should immediately take steps to have a man devote the major portion of his time to the supervision of the administration of the chlorine until such time as the Medical Officer of Health decided that the apparatus was modified so as to do without such supervision.

The typhoid cases had apparently originated between the first part of December and the end of that month. Cases are still being reported, which shows that the outbreak has possibly not yet reached the end.

All of which is respectfully submitted.

F. A. Dallyn,

Provincial Sanitary Engineer.

Toronto, January 21st, 1915.

It was found later that much of the sewage contamination had been car[illegible] by a shore eddy from a break in the main outfall sewer which discharges abo[illegible] thousand feet below the waterworks intake. F.A.D.

REPORT RE GRIMSBY

Dr. J. W. S. McCullough, Chief Officer of Health, Toronto.

Sir,—Pursuant to the request of Dr. R. S. Alexander, Medical Officer of Health for Grimsby, under date of April 7th, a visit was made for the purpose of examining into the sanitary conditions of the Village Inn at Grimsby and at the two canning factories. I beg to report as follows:—

The proprietor of the *Village Inn* is Mr. John Hewitt, Deer Park Farm. The Inn is a substantial building containing 28 bedrooms, 23 of which are equipped with toilets and baths. The annex which is used in connection with this building has three toilets, and is not connected with the disposal works at present attached to the Inn. In summer as many as from 30 to 40 guests, with 15 attendants, may be at the Inn at one time. The rates are $3.00 per day.

From an examination of the present works it would appear that the proprietor of the hotel had never had the advantage of competent advice on the matter of sewage disposal, the tanks and cesspit being entirely inadequate for the services required. Plenty of land is available for subsoil drainage. Apparently some attempt has been made to use this, but the manner in which the tile is exposed shows that the work was not all properly performed.

The local Medical Officer of Health and Sanitary Inspector have met with considerable difficulty in having this nuisance corrected. At the time of my visit the sewage was flowing over the surface of the ground, creating a visual nuisance as well as being a menace to the health of those in the neighbourhood. If this is not corrected within a month it may mean a serious nuisance from flies attracted by the odour breeding along the margins and in the scum of this stagnant matter, and possibly infecting the people residing in the hotel.

The proprietor was away, and his brother was in charge during his absence. He was advised of the existing conditions and defended his position by saying that he had been unable to get competent advice and that the local inspector was a nuisance in his efforts to rectify matters. It would appear that the proper solution for these people will be to have a competent engineer lay out a proper subsoil irrigation scheme. New tanks will require to be constructed and should be of a size to meet the requirements of the situation. The work should be completed by the 24th of May.

A visit was made to the *Bell Fruit Farms, Limited*. The cannery is under Mr. Boyle, manager. The wastes are emptied directly from a small settling tank into the creek, which runs for some distance along the railway track and then joins the main creek running through the village.

Mr. Boyle stated that in the tomato season frequently as many as 40 to 50 barrels (40-gallon barrels) of tomato pulp were discharged into the creek. The tomato season lasts about four weeks. This is the most convenient way for them to get rid of their pulp, but it creates a very serious nuisance to the residents and the school within this vicinity.

The proper method of handling this pulp is to elevate the waste skins and wet pulp to a tank and carry it on to the farms for fertilizer. This is done by the other cannery and gives rise to no nuisance whatsoever. The installation of such an equipment would put the Bell Fruit Farms to some expense; this, however, would not be excessive, in view of the fact that they have to this date suffered no real expenditure in connection with disposal.

The Dominion Canners are operating what is known as the *Grimsby Canning Company*, Mr. Tod, manager. Their methods of handling wastage are quite ingenious, and have to a certain extent been made possible by the location of the plant, which is on a side hill. All wastage is either elevated directly to a storage tank which is emptied every twenty-four hours, or is conveyed by a water carrier to two elevated storage tanks located in the lower part of the property. The outlet from these two tanks is screened and passed through a third sedimentation tank. The contents of the tanks, by reason of their elevation, can be shovelled or pushed into wagons

which convey the wet wastage to the farms where it is used as fertilizer. This material has to be removed inside of twenty-four hours, as fermentation takes place in about that time. In this plant the tomato pulp (which is obtained from the grinding of the skins and wastage) is manufactured and stored in barrels which are stocked and held for sale. When the pulp is not required for commercial purposes, the grinder is stopped and the wet skins and wastage are by-passed and elevated directly from the tables to a storage tank and conveyed from there to the farms.

F. A. Dallyn,

Provincial Sanitary Engineer.

Toronto, April 12th, 1915.

REPORT RE GRIMSBY WATER SUPPLY

Dr. J. W. S. McCullough, Chief Officer of Health, Toronto.

Sir,—Acting under your instructions I visited Grimsby on Saturday, November 27th. Dr. Alexander, the Local Medical Officer of Health, refused to accompany me to inspect their filter, being quite satisfied with the quality of the town water supply. An inspection, however, of the so-called filter plant confirmed the bacterial examination of the water made during the trek of the troops to Toronto, and did not in any way justify Dr. Alexander's confidence in the efficiency of the filter. The bacteriological examination showed that the town water supply was heavily polluted.

Upon investigation it was shown that the town's filter was incapable of relieving the water of anything save the coarsest matter in suspension. On the day of my visit the water, after passing the filter, showed a turbidity of at least 20 parts per million, and certainly if there was any pollution of the raw water it was not removed by the passage of the water through the filter. The filter, which is almost a menace, in that it gives a confidence in the water supply that is not justified, consists of nine 1-ft. layers of coke (particles 1½ inches in diameter) held in place by wire baskets. The water percolates through this coke to the "pure" water reservoir. To clean the filter the baskets are fished out and washed with a fire hose. This is done about once in every two or three months.

There is no extended intake pipe, the water being taken directly from the shore through a concrete pier.

The water supplied to the village of Grimsby is unsafe and chlorination should be resorted to immediately to forestall an epidemic of water-borne diseases.

All of which is respectfully submitted.

A. V. De Laporte,

Chemist in Charge of the Experimental Station.

Toronto, November 27th, 1915.

REPORT RE PIPE LINE AND SOURCE OF WATER SUPPLY, CITY OF GUELPH

Dr. J. W. S. McCullough, Chief Officer of Health, Toronto.

Sir,—On April 19th inst., acting under your instructions, the undersigned went to Guelph to investigate the pipe line and report on conditions and make recommendations for improvements. We were met at the City Hall by Mayor Mahoney, Dr. Howitt, Medical Officer of Health, and Dr. McNally, District Officer of Health; arrangements were made to visit the head springs and go over the pipe line in the afternoon of the next day.

We were accompanied on the inspection by Mayor Mahoney, Dr. McNally, Mr. Torrance, member of the Water Works Commission, Mr. Foster, Engineer in

PLATE 1A.—HEAD SPRINGS.

charge of the Water Works, and the Sanitary Inspector: we took with us the necessary apparatus for taking samples for bacteriological and chemical tests.

Dr. Howitt, referring to the epidemic which occurred in December and January, and which was of an intestinal nature, stated that 5,000 people suffered. Bacteriological examination of the water supply at that time showed pollution and it was generally believed that the water had been the cause of the epidemic. Chlorinating apparatus was installed January 18th, 1915, the solution being fed into the pump well. The sources of supply are springs lying some four and one-half miles to the east of the city, the water being brought into the city by means of a 24-inch conduit of glazed tile pipe with cemented joints, with certain exceptions, notably under the Canadian Pacific Railway tracks and the River Speed, where cast iron pipe is used.

For the greater part of its length the excavation for the pipe line has been in rock, but at several places the pipe line passes through very swampy ground, and at one place is crossed by Torrance Creek, which has a normal flow of about

PLATE 1C.—PIPE LINE.

PLATE 1B.—PIPE LINE.

1,000,000 gallons per twenty-four hours. Torrance Creek is fed by springs, but flows through two farmyards before crossing the pipe line. The water was found, on analysis, to be considerably polluted.

The pipe line discharges into a covered concrete reservoir with a capacity of about 500,000 gallons. The reservoir discharges to the pump well, through a portion of an old connection with the river, and from there is pumped to the city

PLATE 1D.—PIPE LINE.

mains. Chlorinating apparatus was recently installed, and the solution is being fed into the pump well. (January 18th, 1915.)

Lying directly alongside the covered reservoir is an old open reservoir which is directly connected, by means of an open channel, with the River Speed and is connected to the pump well by an old channel under the covered reservoir which has a gravel bottom and which can be closed off by two valves, one at either end. The open reservoir serves for emergency purposes and in case of a heavy demand

a valve can be opened and river water admitted direct into the pump well. It was stated that this valve is never used, the present supply being adequate at all times. (Plate 1.)

At the main source of supply five of the springs were located and examined. They are all on a tract consisting of some 160 acres of farm land, the cleared portion of which is now being reforested. At the points where the flow from the several springs joins the main conduit there are concrete manholes with iron coverings. The water from the various springs was sampled at three of these manholes; two were inaccessible.

The pipe line from the springs towards the Arkell Road is, for a considerable distance, laid in rock. The rock is of limestone formation and badly fissured; from the end of this rock excavation to the Arkell Road the pipe runs through a cedar swamp carrying a heavy quantity of surface water now subjected to pollution

PLATE 1.

from cattle. Upon this last section there camped last fall two persons, and there is a possibility that the spring run-off was infected by their excreta. After crossing the Arkell Road the pipe runs through another swampy area. The ground water flow reaches the surface in some places and runs across the pipe to the River Speed. At a point about 1,000 feet past the Arkell Road the pipe was exposed for about 100 feet of its length for inspection purposes. The pipe line at this section appeared in very good condition, the joints seemingly water-tight and the cement of good quality and well laid. There is a very constant flow of surface water across the pipe, however, and under ordinary conditions the pipe is submerged. Throughout this section any fault in the joints would admit of the entrance of surface water. Since the supply is a gravity one and the pipe is under pressure at no point except the river crossing, openings or faults in the pipe would admit surface pollution. (Plate 2.)

Torrance Creek crosses the pipe line between the Arkell Road and the Canadian Pacific Railway: this creek prior to the outbreak was allowed to find its way

across the pipe in a natural channel. (Plates 3 and 4). In the spring of this year, however, a concrete channel was built to conduct the creek water across the pipe line. At this point the pipe is laid along a side hill and the creek flows across the pipe with considerable velocity. About 100 yards above the pipe is a farm with barns, stables and barnyard which drain directly into the creek. There is also an old-

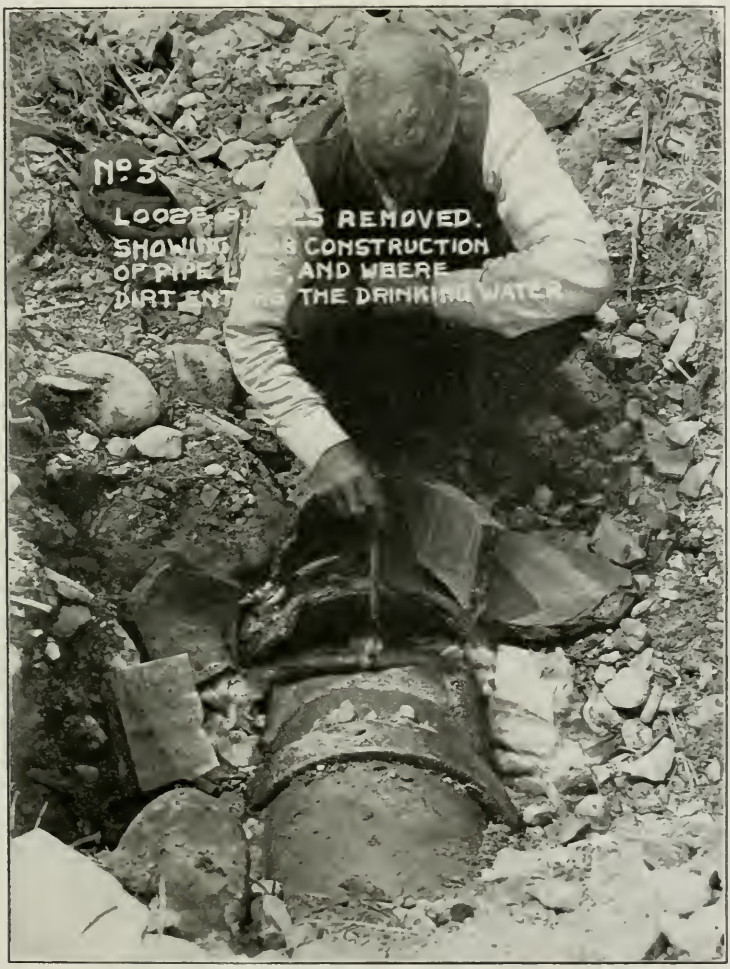

PLATE 2.

fashioned privy within thirty feet of the creek. The water on examination last year was shown to be seriously contaminated. (Plate 5.)

At a point about 15 feet below the creek crossing the pipe line had been opened up, some time prior to our visit, for a distance of some 300 feet. In one place there was found a hole in the pipe several inches in diameter, and a number of the joints were also shown to need repair. This condition, however, had been corrected prior to our visit and the necessary repairs were completed when we saw the pipe.

It is extremely probable that the city water had received considerable contamination by creek water through the faults in the pipe line prior to its repair; steps should be taken to prevent any pollution of this character in the future.

From Torrance Creek to the crossing of the Canadian Pacific Railway the pipe line lies along the side of a hill; it finally crosses under the Canadian Pacific Railway and from there on to the River Speed the line lies within 50 to 100 feet of the railway and is built partly on a fill. There seems to be little opportunity

PLATE 3.

for pollution from surface water in this section, but after a heavy rain surface impurities might be washed down and carried to the water through faulty joints or breaks in the pipe. There is one farmhouse with outhouses and outside privy located 300 feet from the pipe and some 100 yards from the crossing under the River Speed. The drainage from these buildings is across the pipe and as the conduit here is carried in a rock cut, there might be a chance of infection from this source.

The supply is carried under the River Speed and thence for a distance of several hundred feet towards the pump house in a cast iron pipe; in this section leaks at the joints were very noticeable, showing very plainly on that portion of the cast iron pipe carried on a fill. Leaks are responsible for a loss of water which should not continue. From the end of the cast iron section to the pump house the pipe passes through a fairly well settled district, the greater number of the houses using pit privies lying at a higher elevation than the pipe line. The pipe in one place passes through a very dirty yard. It is said that the land here is flooded each spring and that human excreta is seen floating across the line of the pipe. In the event of there being any faults in the pipe itself or in the joints there is

PLATE 4.

nothing to prevent heavy pollution of the water supply due to the proximity of some pit privies. (Plates 6 and 7.)

The pipe line after passing this section and before discharging into the reservoir passes through Lyon Park, a public playground. As we found defecations at several places in this area, it would seem advisable to provide this park with a public lavatory, in order to prevent any possible chance of infection to the water supply. The pit privies should also be forbidden and tight boxes and dry earth closets used in the last mentioned area.

The chlorination apparatus, designed by Mr. Foster, the Water Works Engineer, is such that in the event of the flow of the disinfectant being materially decreased or ceasing entirely, an electrical circuit is completed and a bell warns the

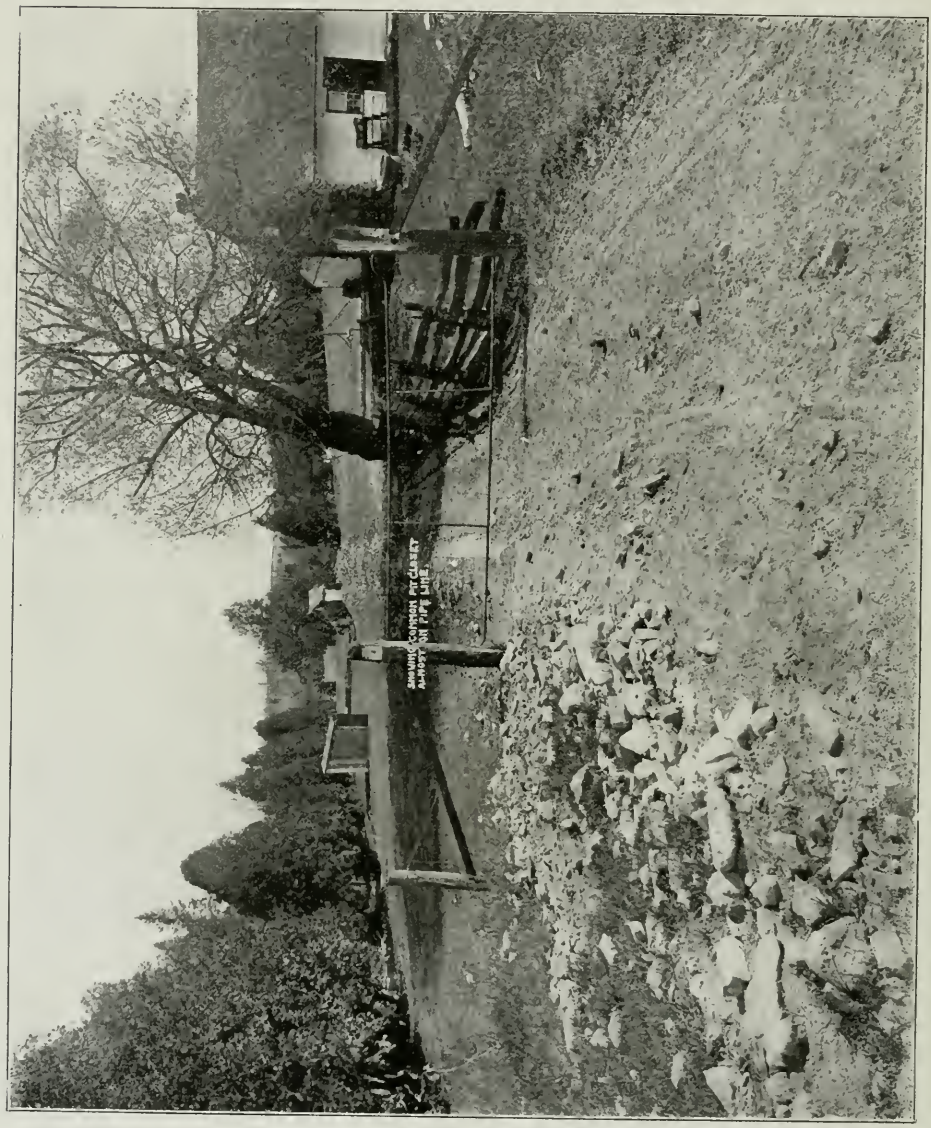

PLATE 5.

engineer in charge of the pump house. Unfortunately, this does not always work. It is reported that the water has been chlorinated continuously since the outbreak during the early part of the year, and the quantity now being used is about thirteen pounds of hypochlorite of lime per million gallons of water.

The old reservoir, lying immediately alongside the new concrete reservoir, has a capacity of about 1,500,000 gallons. This old reservoir is connected to the pump well by an old channel and partly by a fourteen-inch cast iron pipe passing under the floor of the new reservoir; this pipe is provided with a gate valve on the old reservoir end. The water level in this old reservoir was at the time of our inspection about fifteen inches below the level of the water in the pure water reservoir, and the bottom of the reservoir is covered with a very heavy vegetable growth and littered with old cans and rubbish. On the banks of the old reservoir we found well defined traces of human excreta. An overflow pipe leads from the pure water

PLATE 6.

reservoir into the emergency one and is constructed of twenty-four-inch tile, the outlet end being unprotected and allowing free access to small animals. This overflow is below spring flood level in the river. There is a gate valve on the reservoir end of the outlet pipe, which when closed enables an extra two feet of water to be added to the pure water reservoir. On April 23rd, in the morning, there was a depth of water in the pure water reservoir of six feet one inch, and at five o'clock in the afternoon this had lowered to five feet ten inches. In dry seasons, it was reported, there is only about two feet in the supply reservoir and in winter an average depth of about four feet. (Plates 8 and 9.)

The emergency reservoir, as was stated, is directly connected with the River Speed by means of a channel, and although there is a gate provided for disconnecting the two, yet it is so old and out of repair that it is impossible to keep the river water out of the emergency reservoir under present conditions.

Probable Sources of Infection of Water Supply.

From our examination of the pipe line we should conclude that contamination of the water supply might occur at the following places and through the following causes:

(1) Firstly, in the section between the head springs and Torrance Creek from surface water.

(2) At or about Torrance Creek by the entrance of creek water.

(3) Just prior to crossing under the River Speed from a privy located about 300 feet from the pipe line and on higher ground.

(4) In the section between Victoria Road and Lyon Park from contamination of the ground water by pit closets and cesspools.

Plate 7.

(5) At the reservoir through a possibility of a faulty connection, or through the use of water directly by-passed from it, between the old reservoir and the pump well.

Suggested Remedies to Minimize Existing Pollution.

A system of policing of the pipe line is necessary and would prevent a repetition of a chance infection from campers.

The situation at Torrance Creek has probably been handled by the thorough repairing of all joints in the neighbourhood.

To ensure against infection from the privy near the crossing of Speed River a thorough draining of the trench in which the pipe lies is necessary to prevent accumulation of ground water. The privy should be provided with a water-tight box and cleaned monthly.

In the section between Victoria Road and Lyon Park, the pipe runs through a heavy gravel formation. Underdrainage is required in this section.

At Brockville Road the pipe runs within thirty or forty feet of a number of privies and open garbage receptacles, and through a very dirty yard. On the Dodd's property there are located two cesspits above the pipe line and within 100 yards of it. The cesspits should be removed and dry earth closets substituted.

It would seem advisable to open the pipe trench in the neighbourhood and thoroughly inspect the pipe and protect it against pollution, either by going over joints and making them water-tight or encasing the whole section in concrete, as well as underdraining the pipe line. There should also be passed a regulation requiring the use of dry earth closets in this section and a proper supervision maintained over this matter, as well as over garbage for this neighbourhood.

At the pumping station the condition of the valve between the old reservoir and the pump well is doubtful, and, to ensure against contamination through a fault in this valve, it would seem advisable to test the existing valve; if it shows signs of leaking, it would be better to do away with this connection.

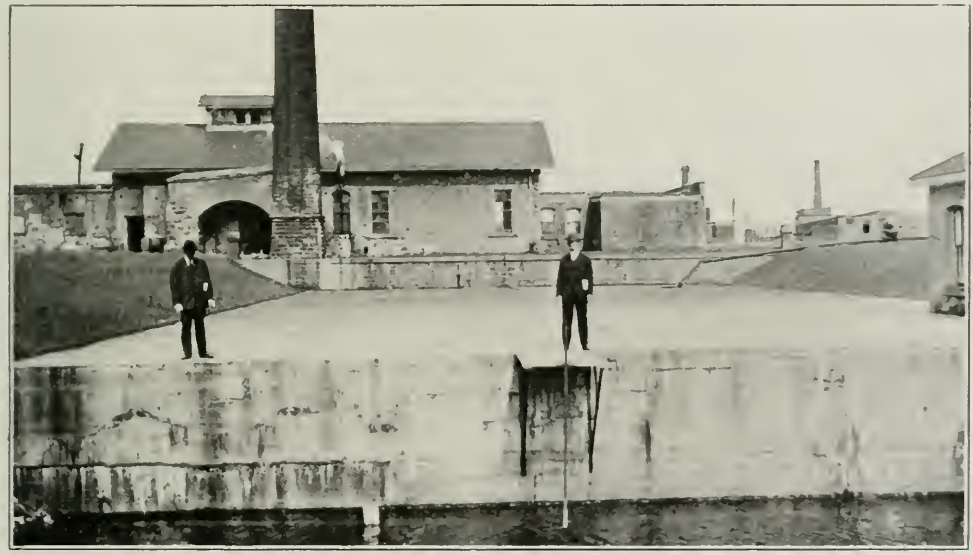

PLATE 8.

If at any time the water level in the pure water reservoir fell below the level of the water in the outside reservoir, and there were faults in the concrete dividing wall between the old and new reservoirs or in the concrete floor of the latter, contamination of the pure water by outside water is inevitable, because the analysis of the water in the old reservoir, the physical condition of its bottom, the heavy growth of water plants and the human excreta on its banks all point to the danger of allowing any water from this reservoir to enter the water supply of the town.

On April 31st there was a very distinct leak through the dividing wall from the new reservoir into the old, and the location of this leak is shown on plate 8.

CONCLUSION.

The general condition of the pipe, as far as could be seen from the portions laid bare for inspection, was very good, and from our inspection we conclude that there is a probability of the infection having occurred at the places mentioned.

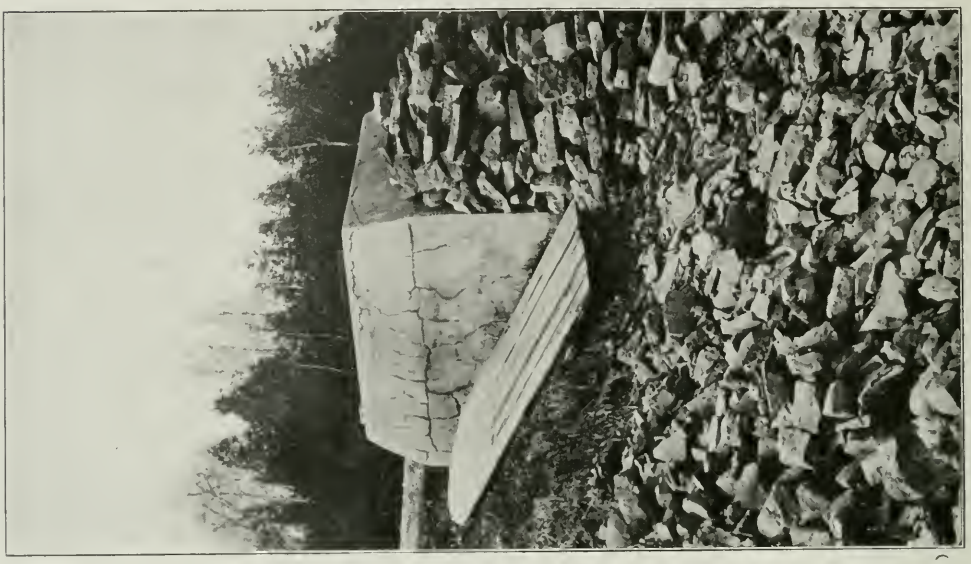

PLATE 10.

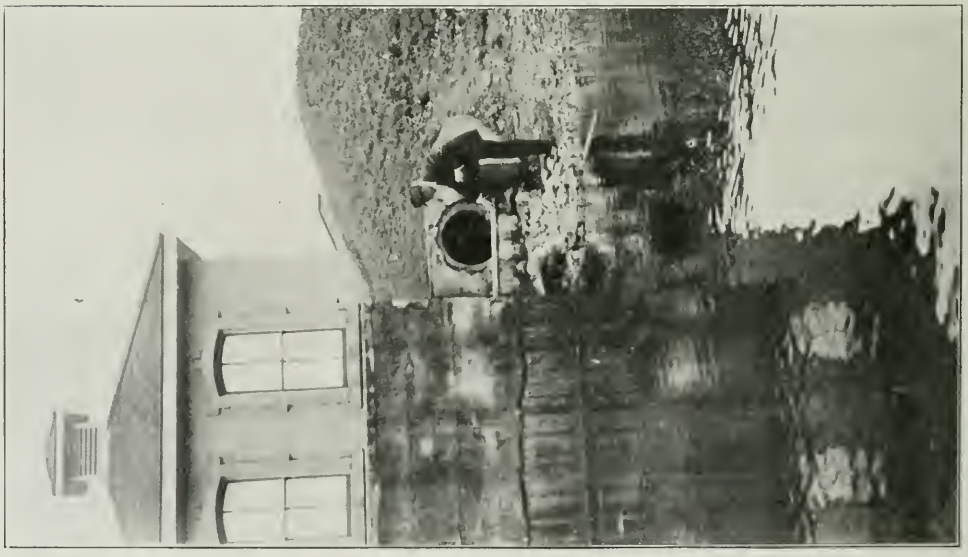

PLATE 9.

There is also a possibility of chance pollution occurring through the carelessness of individuals, owing to the use of grating tops on several of the manholes along the line of the pipe. It might be advisable, therefore, to further ensure the purity of the supply by using another type of manhole top. Plate 10 shows type of existing manhole.

We would point out that the worst feature of the whole system is the proximity of the old basin reservoir to the new, and the connection between the old reservoir and the pump well.

It seems to be lack of foresight to bring the water from springs nearly five miles from the city and then to endanger the whole supply by allowing such conditions to exist at the pumping station.

Provision should certainly be made to inspect the valve controlling the connection between the old reservoir and the pump well. The cesspits and pit privies should be removed at once.

H. W. Tate, B.A.Sc.
A. V. DeLaporte, B.A.Sc.

April 25th, 1915.

GUELPH WATER SUPPLY

Report on Twenty-four-inch Glazed Tile Conduit.

Dr. J. W. S. McCullough, Chief Officer of Health, Provincial Board of Health, Toronto.

Sir,—Acting under instructions from the Provincial Board of Health, and following a joint deputation to your office by members of the Guelph Water Works Commission and Public Health Officers, I proceeded to Guelph on July 21st, to make a further examination into the condition of the conduit through St. Patrick's Ward, and also at various places between the ward and springs.

I was accompanied on the inspection by Mr. Foster, Manager of the Water Works; Mr. Mahoney, the Mayor; Dr. Howitt, Medical Officer of Health; Mr. G. B. Ryan, Chairman of the Water Commissioners.

We first visited the pipe in St. Patrick's Ward and installed the boards for putting the pipe between Audrey Street and Victoria Road under pressure. We then drove up to where the pipe line crossed the Arkell Road and from there inspected the conditions of the ground overlying the pipe, both towards the springs and down to the St. Patrick's Ward.

About 800 feet east of the Arkell Road and towards the springs, the pipe runs through a very wet, swampy area, and the top of the pipe is only about eight inches below the surface of the ground. This place is used as a drinking pool by cattle, and there was evidence of this by the number of droppings lying immediately over and alongside the pipe. From this point eastwards towards the springs for a distance of about 1,900 feet the ground is swampy and the average depth of the pipe below the surface would not be much more than a foot.

Following down the pipe line from the Arkell Road there is only one really bad spot between this road and Torrance Creek. Here water is lying over the pipe

and the place is used as a drinking pool by cattle. This section of the pipe was opened up at the time of the first visit and was repaired.

No other serious conditions were noticed from here to the St. Patrick's Ward.

From Victoria Road to the fence bounding Lyon Park the pipe has been practically all exposed, but only a small section being between Victoria Road and Audrey Street, a distance of 470 feet, could be tested by applying pressure. The pipe was then running in this section practically full and I observed some half a dozen minor leaks in the bottom of the pipe.

I went thoroughly over the whole exposed pipe and noted the following faults:

Leaks 11, all small.

Joints needing recementing, 26.

Cracked flanges, 5, these mostly caused by falling boulders during the stripping.

Cracked pipe, 2.

The total length of pipe exposed is about 2,200 feet, and the tile being in 2-foot sections, the number of faults observed amounts to about 4 per cent. of the total number of joints in this particular section.

In two places, namely at Brockville Road and close to the Lyon Park fence, pits have been dug alongside the pipe to ascertain the level of the ground water, and at the first pit it was found 6.31 feet below the top of the pipe, or elevation 90.74, using the same datum shown on section of reservoirs contained in report of April 19th; and in the second pit 6.38 feet below the bottom of the pipe, elevation 90.23.

Close to Kingsmill Avenue and about 100 feet above the pipe line there is an old well, the level of the water standing at 91.01, and I am informed that the level changes little if any throughout the year.

The surface of the water in the river on July 15th was at elevation 88.84, and maximum high water as given on the report of April 19th is 93.65.

The elevation of the top of the pipe at Victoria Road is 98.1 or 4.83 feet above extreme high water; from there to Lyon Park the pipe has an average grade of 0.1 per cent., giving the top of the pipe at the Park fence an elevation of 95.44, or 2.79 feet above extreme high water; it would, therefore, seem improbable that the pipe in this section was at any time flooded by ground water.

The profile of the pipe line shows the various levels referred to. There is also attached to this report a plan of part of St. Patrick's Ward showing the pipe line, location of various factories in operation, and dwelling houses in the area now under discussion, together with the number of occupants of same. It will be seen from this plan that the district is a manufacturing one, and the class of houses workmen's dwellings, and it is highly improbable that any other class of dwelling will be erected in the neighbourhood. It seems unlikely that the outbreak of disease of the early part of this year was caused by pollution of the water supply from ground water in this section, nor is there any immediate danger to the supply from surface pollution due to the condition of the pipe.

By repairing the present leaks and faults in the pipe in this section and building the stone drain referred to in my report of July 15th this section would be put in first-class condition.

It must be overlooked, however, that as this district is built up some other class of pipe, preferably cast iron, must be used, but as to when this change will be necessary is a hard question to answer and will depend entirely upon the rapidity with which the setion is built up. At the present time, however, this section should be perfectly safe.

Section from Arkell Road towards springs:

The swampy area lying between the Arkell Road and the source of supply needs urgent attention, more especially as the pipe lies very close to the surface, in fact within a few inches in places, and must, in wet seasons, be wholly covered with swamp water.

The Commission have options on land on both sides of the pipe line and they propose fencing in this land, thus getting rid of the cattle nuisance. It would seem advisable, however, notwithstanding this precaution, to thoroughly drain this swampy area by an open drain lowering the ground water below the level of the pipe. If this is not possible, then cast iron pipe should be used throughout this section. This recommendation also applies to the section on the swampy area between Arkell Road and Torrance Creek, being that portion lying in Lot 3, Concession 9.

The danger of pollution of the supply immediately at the reservoir, seems to have been overlooked by the Water Commissioners, and from recent conversation with Mr. Foster is seems highly probable that pollution of the supply by water from the old reservoir has been an actual fact.

A contract has been let and building operations commenced on a new concrete reservoir, and when finished the emptying and examination of the first concrete reservoir will be possible and should form part of the programme of the Commissioners.

It is also their intention to fill in the old open reservoir and thus do away with that danger to the supply.

The Commissioners realize that the water at the present is lacking in purity and are using approximately twenty pounds of chloride of lime per million gallons of water as disinfectant.

H. W. Tate,

Assistant Engineer Provincial Board of Health.

Appendix.

A visit was made to the works of the International Malleable Iron Co., and the lavatories and their outlets inspected. This company has been operating three years and is still without sewer connections, and has no proper means of disposing of the sewage. The sewage from one of the toilet rooms lies in an open drain about fifty feet in length with no outlet, and human faeces lie exposed on the surface within a few feet of the building. Another of the toilet rooms discharges into a closed pit alongside the building; the overflow from this pit drains into some low-lying land within fifty feet of the building.

Some of the employees of the company are in the habit of eating their lunches under some trees alongside the low-lying area.

The company are now applying for a sewer and from the conditions it would seem to be an urgent necessity.

FURTHER REPORT RE GUELPH WATER SUPPLY

Dr. McCullough, Chief Officer of Health, Toronto.

Sir,—I beg to report that on August 5th a further visit was made to Guelph for the purpose of observing the leakage between the reservoir and the pump well and examining the city chlorinating apparatus.

The chlorinating apparatus, whilst theoretically complete, was in fact most unsatisfactory. It was very difficult to regulate the flow accurately, the orifice having a tendency to clog with the solutions in use. The storage tank was altogether too small and was not in duplicate.

It was recommended that two large tanks 5 feet in diameter, each having a capacity of about 400 gallons, be installed and connected by means of a ball-cock valve with an orifice box above the well. Larger tanks and a greater amount of solution will permit of a better control and will obviate the difficulty now being experienced of feeding a very turbid solution at the time of mixing. I am pleased to report that on August 13th this work was completed.

Observation on Reported Leak to the Pump Well.

Upon my request the valve connecting the reservoir to the pump well was closed, and the pump well was de-watered to a point just below the pipe leading from the present reservoir basin. I then entered the pump well and discovered a very heavy flow entering the well. This water was somewhat turbid and apparently came from a ground water supply which was finding its way into the connection between the reservoir and the pump house. It appears that the old channel connecting the stand-by basin next to the river with the pump well has been built with a gravel bottom, and there was no means of shutting off the ground water except by the disused valve on the well itself, and which would also shut off the reservoir as well. This valve, as a matter of fact, has been out of operation for some years, and consequently this ground water must have been periodically flowing into the well ever since the plant has been put into operation.

The analyses of the leakage show it to have a very high (thirty-seven degrees) count, colon in 1-10 c.c., and a chlorine content of thirty. At this time the pipe line showed chlorine eight P.P.M. and seepage water from the site of the new reservoir chlorine eighteen P.P.M. Unfortunately, the river water was not analysed at that time. Samples have since been examined, however, and show from 4 to 6 parts per million of chlorine as chlorides.

It would appear from examination of the bacteriological reports for the municipality that there have been frequent occasions when the city taps analysed considerably higher than the pipe line, which remains very constant at eight parts per million. The city taps at some times show chlorine as high as from twenty-two to twenty-four parts per million, which I believe points to the fact that this leakage at the well has been occurring, and this polluted water, presumably fed from the river, has been finding its way into the mains.

The following elevations show the possibilities of this ground water reaching the pump well:

Elevation of top of reservoir at centre taken at	100
River elevation, August 5th, shown to be	93.1
Old channel behind the dam, next to the river water level	91.8
Old basin through which the valve connects from the reservoir water level	90.52

Lower basin where excavation was going on	87.17
The water in the clear water reservoir at 4 o'clock	92.3
Bottom of well	85.0
Water in old bed near the pump house	91.07
Bottom of pipe leading from reservoir to well	87.5

The pumps are capable of lowering the well to an elevation of 87.5.

With the elevation of the well at 89.4 all valves closed, the leakage was sufficient to raise the water three inches in one minute forty seconds.

At 12.50	a.m.,	all	valves	closed, the elevation was	89.86
1.00	"	"	"	"	90.0
2.00	"	"	"	"	90.0
4.00	"	"	"	"	90.12

Elevations were taken of the old and new reservoir levels after the work had been done to determine the leakage at 12.30. The elevation of the old reservoir was then shown to be 89.55, and that of the new reservoir site 89.48. Apparently the operations in the well had caused the elevation in the old reservoir to change from 90.52 to 89.5.

For some weeks past it has been the custom of the engineer at the pump house to so set the valve leading from the clear water reservoir to the well that the water elevation in the well does not exceed 90.25. This was done to prevent leakage of clear water from the reservoir to the ground which was observed to be the case when the elevation exceeded this.

It is quite probable that the elevation in the well is at times lower than 90.25 and thus permits the ground water entering.

The situation is rather serious in connection with this water, and until both the pipe line and the leakage at the well are corrected, the disinfection should be continued with care: the quantity used should not be less than fifteen pounds per million gallons. It might be advisable to increase this to about eighteen pounds; fifteen pounds should be the absolute minimum.

F. A. Dallyn,
Provincial Sanitary Engineer.

REPORT RE LITTLE CURRENT

Dr. J. W. S. McCullough, Chief Officer of Health, Toronto.

Sir,—I beg to report that upon examination of the municipailty it was found that this town, having a population of 1,362 (1914 census) and an area of 305 acres, was entirely without a proper water supply, and that the intakes for three restaurants, two laundries, one dentist, one doctor, one barber shop, all the hotels in town (three in number), one bank, and several stores were placed in a very seriously polluted water right near the shore, and that in several instances sewage from hotels was discharged within 6 to 10 feet of these intakes, to say nothing of passenger boats tying up at the wharves directly over the intakes at several places. One of the ice-cream parlours and a restaurant dip water directly off the wharf, where conditions are very far from being sanitary.

It is most advisable that this municipality be instructed under Section 96 of the Public Health Act to proceed with the installation of a water supply. They have some excess power at their electric lighting plant, where pumping machinery and other appurtenances could be installed at a reasonable expense. The municipality attracts quite a large summer population on account of its location on the

north channel, where most of the island boats call. A very serious epidemic of typhoid occurred in 1914, and with the existing conditions it is liable to recur at any time.

As a temporary measure it would be advisable for the town at its own expense to construct a 3-inch intake running out 250 feet into the channel at a point nearly opposite the Mansion Hotel and terminating at the government property near the band stand; this intake should be laid in a channel dredged out at the water's edge so as to protect it from boats stopping and from ice conditions in the winter. At the shore end connection should be had with the existing intake of the Mansion Hotel. A check valve should be placed at this point on the hotel suction and the check valve removed from below the pump at the hotel. The storage tank on these premises is of considerable size and is quite capable of furnishing the town people with water of a very good character if a pipe is carried up from a point between the check valve and the street line and a tap placed thereon. The town people will then fill their pails from this tap rather than by dipping water out of the lake at the water front.

Between this point and the Huron Hotel, some 525 feet along the water front, there are some six or seven intakes. These should be intercepted by a pipe either connected to the proposed 3-inch intake or divided up, some connecting to the proposed 3-inch intake and the balance connected to a 3-inch intake situated opposite the Huron Hotel and run out into deep water at a point 250 feet from the shore line.

Personally, I am of the opinion that one intake will serve the purpose somewhat better than two, although if two intakes were constructed and a 3-inch pipe connected between them and valves placed on the intakes on the outside of this connection, either intake would be available in event of some accident, and polluted water could be shut off by closing either one of the valves. This is a feature which is worth considering.

Mr. Trotter has a very creditable water supply outfit, having a gasoline pump and pressure tank, and his premises are capable of feeding himself and Messrs. Dawson and Turner. I believe, in view of the very serious nature of the water supply, that, for the benefit of the municipality, these temporary connections could be made and reasonable compensation could be tendered to the parties affected. In discussing the matter before the municipal council, Mr. Trotter, the bank manager and others interested all were agreeable to the proposed works, and parties having storage tanks supplied either by gasoline pumps or windmills appeared agreeable to furnishing the street along the water front with several taps connected on to their storage tanks. All of this work could be undertaken at a very reasonable cost, something less than $600, and could be ordered as a work of necessity.

The municipal council should pass a by-law, upon completion of the work, making it prohibitory to use water for domestic purposes in any of the hotels or restaurants if taken from the water front in buckets or through intakes laid thereto.

Mr. W. F. Fuller is in charge of some work now being undertaken by the Canadian Dredging Company in the channel and has a boat dredge with three drills in the vicinity of the water front at this time. The use of this drill to create a properly protected channel, I believe, could be arranged for.

F. A. Dallyn,
Provincial Sanitary Engineer.

Toronto, June 16th, 1915.

REPORT RE OAKVILLE WATER SUPPLY

Dr. J. W. S. McCullough, Medical Officer of Health, Toronto.

SIR,—Pursuant to the request of the Water Commission, Mayor and Local Board of Health of the Town of Oakville, an examination was made into the water supply situation there on March 18th, 1915.

The water supply, which may be taken either directly from Lake Ontario or from a storage reservoir holding a week's supply, has shown, since the installation of the sewerage system, frequent traces of contamination with sewage. Analyses dating from May 8th, 1914, to April 13th, 1915, show colon to be present in some quantity in almost every sample collected. Samples were collected during ten different months in all. Sewage may at any time contain infective material and will in all probability give rise to some water-borne epidemic if efforts are not made towards increasing the protection of the water supply.

In connection with the Oakville sewerage system two (2) sedimentation tanks are installed, one on either side of the creek. The effluent from these tanks is supposed to be chlorinated. Unfortunately, the apparatus to permit of this is most inadequate, making it very difficult for the sanitary inspector or whoever is in charge to properly chlorinate the sewage. In addition to lack of apparatus, no effort has been made to house the bleaching powder which is used in connection with the disinfection operation. Bleaching powder when exposed to the weather, especially to moisture, loses strength very rapidly. A drum which has been exposed for the period of a month or so would doubtless lose efficiency until only about 10 per cent. of its total weight can be considered available chlorine. The material is received having a strength of available chlorine equal to 38 per cent. of the weight. Bleaching powder should be carefully housed and a lid provided to fit over the opening. It should be kept in a dry place. To obtain efficient results not less than 40 lbs. of bleach should be used per 100,000 gallons of sewage, since no provision has been made in the tanks for storing of the sewage to give it contact after chlorination.

The bleaching powder should be dissolved in considerable water and the solution fed continuously to the sewage. It is not proper to put in a weight of bleaching powder and let fresh water flow continuously over it and thence to an orifice. The powder is very soluble and the available chlorine will probably leach out inside of three hours, which means that the first sewage treated will be overdosed, and after three hours practically no chlorination or disinfection will take place.

It would be advisable to have the existing tanks torn out and a large tank constructed for the purpose of having more solution, so that a large orifice may be used. The new tank should have a capacity of 800 gallons at least. It is convenient to have such a tank divided into two compartments, each holding about 400 gallons. The bleaching powder may be thrown directly into the tanks and the mixing water introduced at the bottom. The solids which accumulate in the tank can be turned directly into the sewage whenever the tank requires cleaning. The pipe leading to the orifice should not be inserted higher than 6 inches from the bottom of the tank.

If chlorination of the sewage is well looked to, the hazard at the water works intake will be considerably reduced. Unfortunately, in addition to the sewage there is pollution from pleasure boats plying in the creek, which carry at times from fifteen to twenty passengers. And there is pollution also from agricultural drainage discharging to the creek from some considerable area. The creek unquestionably at all times contains a large volume of polluted water, which may find its way to the intake. The intake is less than half a mile distant, and it is but reasonable to suppose that the intake will occasionally be affected by pollution from the creek and sewers.

The Provincial Board of Health ordered chlorination of the water July 27th, 1914, at which time the apparatus necessary for administration was installed by the municipality. This apparatus was inspected on the occasion of our visit and appeared to be adequate, with two important exceptions:—

(1) The quality of the bleach being used was entirely unknown; if it was of the same character as that used for the disinfection of the sewage, it would probably not have more than 15 or 20 per cent. of its proper strength.

When a bleach of this character is used, it is almost impossible to suggest what weights to use per million gallons of water pumped. Fresh bleach, as stated before, will have a strength of 38 per cent. available chlorine and, if kept in a dry place and with a tight fitting cover, will retain its strength for as long as four months, at the end of which time the available chlorine will be about 30 per cent.

(2) The orifice feed was not visible to the operator, and from the arrangement one could not tell whether the bleaching solution was being fed to the water or whether the solid matter had temporarily clogged the orifice and shut off the flow.

This portion of the equipment can be improved very materially by placing a sight feed above the floor in the pump house. This could be arranged after the fashion of the sight feed used in oiling the DeLaval turbines. Or an arrangement could be made to use a guage glass not less than ¾ inches inside diameter, and having the orifice raised from the bottom fixture in a cone shape, exposed in the upper portion of the glass tube. Such arrangement was sketched for the information of the engineer and will doubtless be installed.

From the manner in which the pumps are operated, the feeding of the chlorine for domestic requirements can be carried out satisfactorily; some difficulty may be experienced when pumping for fire requirements, when overdosage is preferable to underdosage. The capacity of the pumps alters materially when being operated for fire purposes, since they are of the centrifugal type, which have a maximum efficiency for the rated discharge pressure.

It is most necessary in handling this water supply to have the water after chlorination delivered into the storage basin at the side of the pump house. Protection would not be obtained by chlorinating and pumping directly into the mains of the town. The storage basin contact is a necessary feature of this system. If at any time it is contemplated to pump direct from the lake to the city mains, the quantity of chlorine must be materially increased and as much as 20 lbs. per million gallons should be used. Ordinarily from 12 to 14 lbs. will be sufficient, with the storage available in the reservoir.

The proper method of protecting this water supply would be to install filters. The Water Commissioners have been operating the plant at a profit and should continue to do so, even if the capital expenditure of from $10,000 to $12,000 was spent in erecting a filter house. Other municipalities have done this and have not suffered from the burden of the expense.

A big advantage of a protected water supply and sewerage system is the entire absence of typhoid, para-typhoid and diarrhœal diseases in the municipality. When considered in the matter of dollars and cents, the advantage lies in installing a protected water supply.

JOHN A. AMYOT,
Director of Laboratories.

F. A. DALLYN,
Provincial Sanitary Engineer.

Toronto, April 16th, 1915.

REPORT RE OAKVILLE WATER SUPPLY

Dr. J. W. S. McCullough, Chief Officer of Health, Toronto.

SIR,—Acting under your instructions I visited Oakville on November 27th to see why the town water supply showed such a heavy pollution when examined by the Militia authorities.

They have at Oakville an excellent storage reservoir capable of holding a week's storage, but at the time of my visit practically no use was being made of it.

To secure a safe water I believe an increased dose of bleaching powder should be added, making the amount roughly 0.75 p.p.m. available chlorine, or 22 to 23 lbs. of bleaching powder per million gallons. I am of the opinion that this quantity would not give noticeable taste after a week's storage. To lessen the sewage pollution in the water supply the town should install a proper chlorination system for their sewage; the present system is absolutely ineffective.

All of which is respectfully submitted.

A. V. DELAPORTE,

Chemist in Charge of the Experimental Station.

Toronto, November 27th, 1915.

REPORT RE RENFREW

Dr. J. S. S. McCullough, Secretary Provincial Board of Health, Ontario.

SIR,—A visit was made to Renfrew on April 26th to determine the character of the water supply and the present method of operating the mechanical filters. The visit was made at the request of the municipality because of the continued presence of B. Coli in the filter effluent.

The water supply is taken from the Bonnechere River at a point near the north of the town opposite the end of Reddy Street. The intake is a shore crib some sixty feet above and opposite Smith's Creek, which receives the drainage from part of the town and from the tannery. The intake pipe is carried down along the bed of the river through a very polluted area to the new pumping station which is part of the power house. The intake is of concrete pipe, anchored at both ends and liable at any time to rupture by expansion.

The water after being received at the pumping station is passed through mechanical filters. The filter plant consists of four units 8 feet in diameter, and one horizontal unit 8 feet in diameter by 25 feet long, giving a total filtering area of 400 square feet. At the time of my visit 65 lbs. of alum were being used for each 62,500 gallons pumped, being about 2-3 grains per gallon. Analyses made under the direction of Dr. McCann showed colon to be present frequently in the town taps.

The pollution of the source of supply takes place at the following points. Several sewers discharge into the Bonnechere River at Eganville: the most serious of these is probably that of the public school. This sewage can be taken care of by tile laid along the river bank or in an area some distance below the point of exit. In conversation with one of the school board the statement was made that in view

of the order issued by the Board to provide treatment for this sewage, the School Board had endeavoured to treat the same by adding a small amount of bleaching powder to their flush tanks. Unfortunately, there is no storage tank between the fixtures and the water front. Consequently no contact period is available, and the sewage is discharged into the river practically without any treatment at all. This condition could be rectified by laying tile, as suggested.

Several of the hotels also discharge sewage untreated into the river at this point; they should be required to put in irrigation systems of some character.

One of the most serious features, however, of the water supply, in my mind, is the condition of the water through which the intake passes just before entering the pumping station. Any rupture or disturbance of the pipe might occasion a very serious pollution of the water supply. This matter was carefully gone into at a meeting of the Council which I had the privilege of addressing in the evening, and it was suggested that a sewer be carried up Reddy Street and intercept the drainage now entering the pond above the power house, and that steps be taken to clean up Smith's Creek as much as possible, removing all outhouses and prohibiting the throwing of rubbish, etc., into its waters.

Upon examining the operation of the filter plant it appeared that the method of adding coagulant was not very satisfactory on two counts: (1) The quantity of chemical is somewhat less than the water requires: at least 1 1-3 grains per gallon should be used. This means that the quantity at present being administered should be doubled; to ensure this going in regularly during the period of pumping some experiments should be undertaken by their Engineer, Mr. Stewart, so that the quantity may either be fed as a uniform solution or the apparatus should be constructed so that the dissolving action is uniform throughout this period. I requested that water be sent to our Experimental Station at Toronto in order that some experiments might be conducted to determine the proper quantity of bleaching powder to be used for disinfection purposes. Samples were received and the experiments show that .7 p.p.m. of available chlorine are required. Assuming the bleaching powder to have a strength of 33 per cent., this means about 21 lbs. of bleaching powder per million gallons will be required. This should be added before filtration, where it will improve the precipitation of the hydrate and give the filters an opportunity to remove any insoluble matter present in the solution: no taste should be experienced with this quantity.

(2) The sand used in the filtration plant was examined and Mr. Stewart, the Engineer, was advised to have it carefully screened in order that a sharp division might be made between the gravel and the sand. The sand obtained from Golden Lake appeared to be of a very good character, except that considerable quantities of small gravel were present which required to be removed by screening.

All of which is respectfully submitted.

F. A. Dallyn,

Provincial Sanitary Engineer.

Toronto, May 10th, 1915.

Laboratory Reports for the Year 1915

Laboratories of the Provincial Board of Health, Toronto

Branch Laboratories at Kingston

Branch Laboratories at London (Institute of Public Health)

REPORT OF THE LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH, 1915

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN:—I have the honour to submit herewith the report of the work done in the laboratories of the Board at Toronto during the year.

The work of the laboratory for the year 1915 has been much greater than that of any previous year. The growing appreciation of the value of the laboratory in public health work is shown by the steady increase in the number of specimens examined.

Year.	Number of Specimens.
1911	5,750
1912	6,767
1913	7,637
1914	8,528
1915	10,839

Specimens were submitted for bacterial examination or chemical analysis as follows:

Diphtheria (Swabs)		4,413
Release from Quarantine	2,375	
Positive	728	
Negative	1,647	
Diagnosis	2,038	
Positive	468	
Negative	1,570	
Tuberculosis (Sputa)		1,886
Positive	441	
Negative	1,445	
Typhoid (Blood)		1,119
Positive Widal	311	
Negative Widal	808	
Rabies (Brains of Animals)		56
Negri bodies present	25	
Negri bodies absent	31	
Milk:—		
Fat, total solids, preservatives, bacteria		75
Water		2,653
Bacteriological	2,583	
Chemical	70	
Liquors (for License Department):—		
Alcoholic content		299
Miscellaneous (including Coal for Public Institutions)		315
Total		10,816

In addition to the above, several other lines of activity show an increase over former years.

Outfits supplied for sending in specimens		14,004
Diphtheria (sterilized swabs in mailing cases)	5,972	
Tuberculosis (bottles in mailing cases)	3,239	
Typhoid (glass slides in mailing cases)	2,111	
Water (sterilized bottles)	2,744	
Typhoid Vaccine (doses 1cc each)		356,221
For Civilian use	5,324	
For Canadian Militia	350,000	
For Newfoundland Militia	900	
Pasteur Treatment for Rabies:—		
Number of cases	52	
Number of injections	840	

Specimens arrived in better condition than ever before. The outfits supplied have been doing effective work. This is highly satisfactory from many standpoints. Not only is the work facilitated by uniformity in the containers, but much of the infected material can be examined with less danger to the operator when regulation outfits are made use of than with the improvised ones formerly used by physicians. The preparation of these outfits involves considerable work, but we feel that it is well worth while.

In the diagnostic work in diphtheria, there are a comparatively large number of negatives. This does not appear to be due to destruction of the organisms in transit or to the failure of the microscope in its application to this work. Many of the specimens are from suspected cases where the physician desires to confirm his diagnosis. He may be reasonably sure that some cases are tonsilitis, pharyngitis, or croup, but is justified in sending specimens to the laboratory and in administering antitoxin if there is *any* suspicion of diphtheria being the correct diagnosis.

Institutional swabbing has been carried on at the Victoria Industrial School, Mimico, and the Hospital for Feeble-Minded, Orillia. Every new inmate is examined upon admission, and swabs from the nose and throat sent to the laboratory. Some of the cultures from these cases have shown the presence of diphtheria bacilli, but there have been no chronic caries found.

In the examination of sputa, there are also many negatives. Of course many of the specimens are from cases which have little clinical evidence of tuberculosis, and even in clinical cases the discharge of the organisms is intermittent. We had one case diagnosed as positive on the *fourth* specimen.

In blood specimens from suspected typhoid, many are negative, for the reason that the Widal reaction is somewhat irregular in its appearance and persistence. Then, too, there are many symptoms of a more or less indefinite character appearing during the first few days of the attack, so that the diagnosis from the clinical standpoint is not very easy. If there is any possibility of it being a case of typhoid, the physician is certainly justified in submitting a specimen of blood for examination.

In all this diagnostic work it is most important that the *negative* report be not misunderstood. In all three diseases a *single* negative report does not *prove* that the patient is not suffering from the disease in question. In the face of good clinical evidence additional specimens should be submitted.

Rabies appears to be well under control. Educational work along this line is having its effect. A few years ago the general tendency was immediately to shoot the dog which bit any person. A great many people now understand that the dog

is the best evidence they have for the diagnosis of doubtful cases. Consequently the number of dogs held in quarantine is greater each year. The County of York appears to have more rabies than any other county, owing to the contact cases in the canine population of a large city such as Toronto. The Department of Health of the City of Toronto, and the Health of Animals Branch of the Dominion Department of Agriculture, receive immediate notification of all local cases brought to our attention. There are no cases reported from Eastern Ontario. The old theory of dog days being especially liable to cause madness in dogs is once more contradicted. There appears to be no seasonal variations for the disease. Pasteur treatments have been uniformly successful without any severe reactions, abscesses, or appearance of serious symptoms following the injections.

The work in milk is very light. Of course, the larger municipalities have milk by-laws and maintain laboratories of their own. The smaller places have no milk by-laws, and little interest is shown in the quality of the milk supplied. Milk is rapidly altered in transit unless well iced, but even the expenditure necessary for this would be worth while if more of the local boards would undertake more extensive work along this line. The quality of milk supplied to the consumer would surely improve if the services of the laboratory were combined with local inspection.

The examination of water is becoming an important feature of our work, and the results appear to justify the seemingly severe criticisms of the old shallow well, and of unfiltered water from lakes and streams. The general use of our own bottles for the collection of samples has put this upon a more satisfactory basis than in former years.

The work of the Chemical Department includes also the analysis of liquor samples for the License Department and supplies for the public institutions of the Province. This last item includes coal (about 150 samples), soap, etc. The value of this in securing quality in goods supplied is not easily estimated, but the appreciation of the laboratory shown by those in charge of the supplies is very encouraging.

The preparation and distribution of typhoid vaccine has been a very important branch of the work. Results obtained by the use of this vaccine show it to be very valuable in the prevention of the disease. An appreciation of this fact has lightened the task of preparing this product on such a large scale. The greater part of the vaccine was for the Canadian Militia. Every man going overseas has been required to receive anti-typhoid inoculation, and the necessary material has been supplied entirely from these laboratories. Three hundred and fifty thousand doses were used by our troops. The sister colony, Newfoundland, was also supplied with 900 doses for overseas forces. In addition, there have been 5,321 doses distributed among the civilian population. The results obtained in lumber and mining camps, in hospitals and other institutions, appear to show that there is a valuable protection obtained by the use of the vaccine. Nurses and others who are in contact with typhoid patients should be inoculated, in order to protect themselves.

All members of the laboratory staff have been united in making all possible endeavor to carry on the work in the absence of our chief, Dr. John A. Amyot, who went overseas with No. 4 Base Hospital in May, 1915.

H. M. Lancaster.

Acting Director of Laboratories.

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tubercu-lous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		Animal Inocu-lations
	+	—	+	—	+	—	+	—	Animal	+	—	
Algoma—												
Chelmsford				3		3						
Sault Ste. Marie		1			9	22		2				
Richards Landing				1		4	1	2				
Little Current						1						
Blind River				1								
Gore Bay												
Webbwood				1			1	2				
Thessalon			1	2	1		1	3				
Timmins				1			1	2				
Worthington			1			1						
Steelton						1						
Bruce Mines	3		5		2							
Jacksonboro												
Naughton												
Manitowaning						3						
Crean Hill							1					
Magpie Mine						2						
Chapleau						1		2				
Creighton Mines					1							
Espanola	1	1		2			1	2				
Brant—												
Brantford					4	23	2		4 dogs	3	1	
Paris			1		4	4		2				
Scotland						1						
Burford				1		1	5	2				
St. George							2					
Bruce—												
Chesley	19	30	11	11	1	3	1	2				
Allanford						1						
Formosa					2							
Elmwood	1	1	1	1	2	3	1	3				
Hepworth				2	1				dog		1	
Paisley	1			1	3	7	2	3				
Tara				1	1	1		1				
Port Elgin		2		2	2	11	4	6				
Tiverton				4	2	7	3	7				
Lucknow				1	1							
Walkerton		1										
Ripley					1	1						
Wiarton						3						
Kincardine					1							
Mildmay												
Carleton—												
Carp	3	1		2		4		2				
Kars				2	6	1		1				
Manotick	1		4	13	1	1		3				
Westboro												
Hazeldean				1								
Kinburn				1	1	1		1				
North Gower				2		4		7				
Ottawa						1	2	3				
Stittsville				2								
Vernon												
Dufferin—												
Grand Valley				1	1	4		1				
Orangeville	10	7	7	1	2	5	2	3				
Shelburne		2				1						

OF HEALTH OF ONTARIO AT TORONTO FOR YEAR 1915.

Milk									Waters		Liquors for License Dept.	Miscellaneous Specimens	Total Specimens for year	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives		Bacteriological																	
				Tubercle Bac.		Pus cells															
Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous matter	Chemical	Bacterial			Water	Diphtheria	T. B.	Typhoid	Total Outfits		Cases	Number of Injections
														6							
										8	10		1	53	15	42	130	18	205		
														8							
											13			14	6	15	6		27	100	
											1			2		12			12		
																				8	
														4	23	10	24		57		
														8	24	5	6		35		
1								1			24			30	24				24	204	
											1			3	1				1		
														1							
											5			15	6	12	15		33	75	
																				20	
											1			1	1				1		
														3	1				1		
														1	6	12	10	12	40	4	
											1			3							
														3							
														1			10		10		
					1									8						14	
										2	65		1	101	53	57	35	42	187	8	10	144
2	1		2											16		4	14	4	22		
														1		2	2	2	6		
														9		6	10	6	22	26	
														2						4	
3													3	84						8	
														1							
														2							
														13		2	12	14	28	10	
														4			20		20		
											12			29		6	10		16	4	
														4		8	12	8	28		
														27		8	12	14	34	4	
											7			30	12	12	10	12	46	16	
														2							
											8			9	10	2	2	2	16		
														2			15		15		
											5			8	6		10		16		
											3			4		2	2	2	6		
																12	10		22		
									1					13							
														10		6	5	12	23		
									1					24							
											5			5	2	6			8		
														1							
											1			5	6				6		
											2			15		12	10	12	34		
														6		48	60	26	134		
														2							
																6	5	6	17		
														7							
1														38		54	6	6	66	24	
														3		6	10	6	22		

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs: Release +	Diphtheritic swabs: Release −	Diphtheritic swabs: Diagnosis +	Diphtheritic swabs: Diagnosis −	Tuberculous sputa +	Tuberculous sputa −	Typhoid bloods +	Typhoid bloods −	Rabies Diagnosis: Animal	Rabies Diagnosis: Negri Bodies +	Rabies Diagnosis: Negri Bodies −	Rabies Diagnosis: Animal Inoculations
Dufferin—Continued.												
Horning's Mill									1 dog		1	
Honeywood								1				
Durham—												
Bethany						4		2				
Bowmanville		3	2		3	10	1		1 dog		1	
Orono				2	3	12		1				
Pontypool						7		3				
Port Hope	4		5	6	6	3	2	3				
Enniskillen					2	5		1				
Millbrook						10		1				
Dundas—												
Morrisburg												
Elgin—												
Rodney			1	2	2	3						
Port Stanley				2		3	2	2				
Port Burwell						2	1	4				
St. Thomas						2						
Essex—												
Essex		1	1	3	1	13		1				
Ford City		2	3	10		2		5				
Harold								2				
Amherstburg						3						
Belle River						5	1					
Kingsville				2	2	7		3				
Comber								1				
Leamington				2	3	7	1	4				
Tecumseth			1	4	4	3		3				
Walkerville						5	1					
Sandwich	1					2	1	3				
Ojibway												
Windsor	3	10	8	97	7	41	9	15				
Frontenac—												
Harrowsmith						2						
Verona						1						
Glengarry—												
Apple Hill				2		4						
Alexandria					1	5		1				
Dalhousie Mills					2	2	2	1				
Williamstown				1			1					
Dunvegan						3						
Maxville								1				
Grenville—												
Kemptville		1	1	5	2	3	2	2				
Spencerville					1			1				
Prescott					2	1	3	1				
Merrickville				1								
Cardinal					2							
Grey—												
Chatsworth					2	2						
Annan						4						
Ayton						4						
Clarksburg		1	2	1		5		1				
Bognor						1						
Markdale				1	1	2						
Owen Sound				5	6	31	8	8				
Neustadt						2		1				
Durham		1		1		7	1	13				

OF HEALTH OF ONTARIO AT TORONTO FOR YEAR 1915.—*Continued.*

Milk									Waters		Liquors for License Dept.	Miscellaneous Specimens	Total Specimens for year	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives	Bacteriological																	Cases	Number of Injections
Fats	Total Solids			Tubercle Bac.		Pus cells		Count	Extraneous matter	Chemical	Bacterial			Water	Diphtheria	T. B.	Typhoid	Total Outfits			
			—	-	—	+	—														
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	2	...	..	8	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	1	7	2	..	30	2	18	25	...	45	...	...
...	...	...	...	...	...	...	...	...	...	...	2	...	..	20	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	10	...	6	20	12	38	...	...
...	...	...	...	...	...	...	...	...	...	...	10	...	..	39	...	6	5	6	17	8	...
...	...	...	...	...	...	...	...	...	...	...	13	...	..	21	12	2	17	2	33	...	...
...	...	..	...	...	...	...	...	...	...	...	...	...	..	11	...	...	10	...	10	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	8	...
...	...	...	...	...	...	...	...	...	...	...	...	1	..	9	...	...	...	..	...	...	...
...	...	...	...	...	...	...	...	...	1	...	12	...	..	22	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	7	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	2	...	2	2	2	6	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	20	...	12	25	...	37	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	22	...	12	10	12	34	...	...
...	...	...	...	...	...	...	...	...	...	...	2	...	..	4	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	3	...	..	6	4	...	10	...	14	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	6	...	...	...	...	...	10	...
...	...	...	...	...	...	...	...	...	...	...	6	...	..	20	18	...	...	...	18	...	...
...	...	...	...	...	...	...	...	...	...	...	1	...	..	2	...	...	...	...	...	...	...
1	...	...	...	...	...	...	...	...	...	...	1	...	..	19	...	6	5	6	17	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	15	...	...	...	18	18	4	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	6	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	7	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	1	..	1	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	9	1	1	200	16	458	222	152	848	33	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	2	12	...	15	12	39	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	6	2	2	2	12	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	6	...	6	5	...	11	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	7	...	6	10	6	22	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	7	...	...	10	12	22	4	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	2	...	...	...	...	...	4	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	3	...	2	2	2	6	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	16	...	...	10	...	10	8	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	2	...	2	2	2	6	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	7	13	18	15	18	64	4	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	2	...	...	10	...	10	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	4	...	2	2	2	6	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	4	...	...	15	...	15	...	...
...	...	...	...	...	...	...	...	...	...	...	1	...	..	5	...	4	4	4	12	...	...
...	...	...	...	...	...	...	...	...	...	...	...	1	..	11	2	14	12	14	42	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	1	2	..	7	4	...	...	...	4	...	...
...	...	...	...	...	...	...	...	...	...	...	1	...	..	59	...	36	65	48	149	52	...
...	...	...	...	...	...	...	...	...	...	...	...	3	..	6	...	...	10	...	10	...	...
...	...	...	...	...	...	...	...	...	...	...	4	...	..	27	6	...	...	...	6	...	...

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tubercu-lous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		
	+	—	+	—	+	—	+	—	Animal	+	—	Animal Inoculations
Grey—Continued.												
Dundalk	....	....	....	1	3	4	1	....	.....	.....	.....	.....
Flesherton	....	....	....	....	1	1	....	....	.....	.....	.....	.....
Heathcote	....	....	....	....	....	1	....	....	.....	.....	.....	.....
Hanover	....	....	....	1	....	1	....	1	.....	.....	.....	.....
Dromore	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Dornoch	....	....	....	....	....	....	....	1	.....	.....	.....	.....
Meaford	....	....	....	1	....	1	3	5	.....	.....	.....	.....
Shallow Lake	....	....	1	7	2	10	....	....	.....	.....	.....	.....
Rocklyn	....	....	....	2	....	....	....	....	.....	.....	.....	.....
Maxwell	....	....	....	....	....	....	....	2	.....	.....	.....	.....
Priceville	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Haldimand—												
Caledonia	....	....	5	1	1	5	1	3	.....	.....	.....	.....
Dunnville	....	....	....	....	2	8	2	7	.....	.....	.....	.....
Jarvis	....	....	1	1	1	5	2	1	.....	.....	.....	.....
Cayuga	....	....	....	....	....	2	....	....	1 dog	.....	1	.....
Hagersville	....	....	....	....	....	1	....	....	.....	.....	.....	.....
Halton—												
Georgetown	4	8	1	7	3	7	....	7	.....	.....	.....	.....
Milton	....	....	....	....	....	7	1	2	.....	.....	.....	.....
Norval	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Oakville	....	....	....	3	1	8	2	6	1 dog	.....	1	.....
Campbellville	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Burlington	25	20	1	6	....	....	....	5	1 dog	1	.....	.....
Acton	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Sheridan	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Freeman	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Palermo	....	2	....	....	....	....	....	....	.....	.....	.....	.....
Hastings—												
Belleville	....	....	....	1	6	4	11	33	.....	.....	.....	.....
Marmora	....	1	2	5	....	3	1	4	.....	.....	.....	.....
Trenton	1	1	1	....	3	6	1	1	.....	.....	.....	.....
Canniftɔn	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Stirling	....	....	....	1	....	....	....	....	.....	.....	.....	.....
Foxboro	....	....	....	....	2	3	1	3	.....	.....	.....	.....
Frankford	....	....	....	5	....	....	3	3	.....	.....	.....	.....
Tweed	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Madoc	....	....	....	....	2	2	....	1	.....	.....	.....	.....
Eldorado	....	....	....	1	....	....	....	2	.....	.....	.....	.....
Sulphide	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Haliburton—												
Haliburton	....	....	1	....	2	....	....	....	.....	.....	.....	.....
Minden	....	....	....	....	1	....	....	1	.....	.....	.....	.....
Huron—												
Brussels	10	7	3	1	2	9	4	11	dog	.....	1	.....
Ethel	....	....	....	1	2	3	2	5	.....	.....	.....	.....
Goderich	....	1	....	1	2	....	....	....	.....	.....	.....	.....
Auburn	....	1	1	1	....	....	....	....	.....	.....	.....	.....
Blyth	12	22	9	20	1	3	....	....	.....	.....	.....	.....
Brucefield	....	....	....	1	....	....	....	....	.....	.....	.....	.....
Belgrave	....	....	....	....	....	....	....	3	.....	.....	.....	.....
Crediton	3	2	1	4	....	1	....	1	.....	.....	.....	.....
Dashwood	....	....	....	....	....	2	....	....	.....	.....	.....	.....
Exeter	....	....	....	....	1	3	....	....	.....	.....	.....	.....
Fordwich	....	....	....	....	....	2	....	1	.....	.....	.....	.....
Seaforth	....	....	....	1	....	....	1	2	dog	1	.....	.....

OF HEALTH OF ONTARIO AT TORONTO FOR YEAR 1915.—*Continued.*

Milk									Waters		Liquors for License Dept.	Miscellaneous Specimens	Total Specimens for year	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives		Bacteriological																	
Fats	Total Solids		—	Tubercle Bac. —	Pus cells —	Count	Extraneous matter		Chemical	Bacterial				Water	Diphtheria	T. B.	Typhoid	Total Outfits		Cases	Number of Injections
										1			10		2	12	8	22	2		
													2		6	5	6	17			
													1								
													3		2	7	2	11			
																				12	
													1		2	2	2	6			
													10								
													20		6	15		21			
													2								
													2								
															12	10	12	34			
										1	1		18			10		10			
										6			25		14	12	26	52			
									1				12		8	7	8	23			
													3								
										1	1		3								
													37		30	20	6	56			
													10			10		10			
										1			1	1				1			
7		4				1		1		38	2		74	48			24	72	2		
										1			1	1				1			
										42			100	24	36			60			
										24	1		25	12				12			
										1			1	1				1			
										1			1								
										1			3								
										18	2		75	18	62	27	62	169	135		
										12	1		29		24	20	24	68	4		
										6			20	6	8	17	8	39	4		
										1			1	1				1			
										1			2	3				3			
										3	3		15	4	6	5	12	27			
										4			15			10	12	22	4		
										17	1		18	16				16	400		
													5								
													3								
							1			1			2								
													3								
													2								
										1			49		36	10	24	70	4		
													13		2	17	8	27	4		
													4		2	2	2	6			
													3		2	2	2	6			
										2			69		46	4	2	52			
													1								
													3		2	2	2	6			
												12	24		12			12	16		
										1			3								
6	4	2	2					6					24	12	14	12	14	52			
													3								
										9		1	15	3				3	6		

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tuber-culous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		
	+	—	+	—	+	—	+	—	Animal	+	—	Animal Inoculations
Huron.—Continued.												
Gorrie						1						
Warkworth				1								
Wingham	3	5	13	5	1							
Kent—												
Blenheim				1	1	1						
Chatham			1	3	9	26	3	6				
Dresden				1	3	8		1				
Duart						10						
Merlin	1		4	6	3	8						
Thamesville			2	3	2	3	1	1				
Tilbury			1		3	1						
Wallaceburg					3	5		5				
Northwood												
Kirkton												
Wheatley						1						
Harwich												
Ridgetown												
Lambton—												
Alvinston						4						
Florence		1		2	2							
Forest						1						
Camlachie												
Petrolia		1	3	4	2	7		4				
Sarnia	2	2	1	8		3						
Sombra			1	3	1	1		4				
Watford												
Wilkesport	1	1		4		1						
Inwood												
Thedford					1	1						
Wyoming								4				
Lanark—												
Carleton Place				1	1	3		3				
Almonte		1	2	3	2							
Clayton		1	1									
Cawthrope				1								
Lanark		1	1	3		1	2	3				
Middleville				1	1	3						
Pakenham						1						
Perth	3	1	3	4	1	9		3				
Smith's Falls					2	3						
Leeds—												
Brockville		1	3	2	5	10	12	5				
Lansdowne								1				
Mallorytown				8		1		6				
Westport				1		1		1				
Lyn												
Lennox and Addington—												
Napanee			1									
Lincoln—												
Grimsby						1		4				
Beamsville						7	1	2				
Campden						1						
Jordan			1		1	3	3	2				
Merriton						1						
Niagara-on-the-Lake						1						

OF HEALTH OF ONTARIO AT TORONTO FOR YEAR 1915.—*Continued.*

Milk										Waters		Liquors for License Dept.	Miscellaneous Specimens	Total Specimens for year	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives		Bacteriological											Water	Diphtheria	T. B.	Typhoid	Total Outfits		Cases	Number of Injections
Fats	Total Solids		—	Tubercle Bac.	—	Pus cells	—	Count	Extraneous matter	Chemical	Bacterial											
...	...	...	...	...	...	...	...	...	...	...	1	...	..	2	1	2	2	2	7	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	4	...	..	37	6	50	2	2	60	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	3	...	...	...	12	12	6	...	...
...	...	...	...	...	...	...	...	...	...	...	6	...	..	54	51	2	72	2	127	32	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	13	...	2	32	2	36	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	10	...	8	12	8	28	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	22	...	4	10	12	26	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	12	...	14	12	8	34	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	5	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	26	...	..	39	20	12	5	6	43	...	1	22
...	...	...	...	...	...	...	...	...	...	...	1	...	..	1	1	...	...	...	1	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	2	2	2	6	...	...	...
...	...	...	...	...	...	...	...	...	...	...	1	...	..	1	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	12	10	12	34	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	4	2	6	5	6	19	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	5	...	2	2	12	16	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	10	...	10	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	21	...	2	2	2	6	...	...	...
...	...	...	...	...	...	...	...	...	...	...	4	...	..	20	12	238	2	2	254	58	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	11	...	8	7	8	23	...	...	...
...	...	...	...	...	...	...	...	...	...	...	6	...	..	6	16	6	5	6	33	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	7	...	12	15	6	33	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	14	12	2	28	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	2	...	2	2	2	6	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	4	...	2	2	2	6	...	...	...
...	...	...	...	...	...	...	...	...	...	...	12	...	..	20	24	28	9	10	71	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	8	...	8	7	8	23	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	2	...	2	2	2	6	...	...	...
...	...	...	...	...	...	...	...	...	...	...	10	...	..	11	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	11	...	24	20	6	50	8	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	5	...	...	10	...	10	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	11	...	1	36	12	...	...	...	12	...	...	...
...	...	...	...	...	...	...	...	...	...	...	5	...	..	10	24	36	...	...	60	...	...	...
													*									
...	...	...	...	...	...	...	...	...	...	...	1	...	16	55	3	36	10	60	109	776	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	24	5	60	89	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	15	...	24	...	36	60	24	...	...
...	...	...	...	...	...	...	...	...	...	...	6	...	..	9	6	...	...	12	18	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	24	...	...
...	...	...	...	...	...	...	...	...	...	...	3	...	..	4	12	30	15	18	75	...	...	...
...	...	...	...	...	...	...	...	...	...	...	6	...	..	11	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	3	...	..	13	6	2	2	20	30	4	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	1	...	..	11	4	...	...	6	10	24	...	...
...	...	...	...	...	...	...	...	...	...	...	3	...	..	4	4	2	2	2	10	...	...	...
...	...	...	...	...	...	...	...	...	...	...	36	...	..	37	42	72	15	...	129	...	...	...

* Coal

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tubercuous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		Animal Inoculations
	+	−	+	−	+	−	+	−	Animal	+	−	
Lincoln—Continued.												
Pt. Dalhousie						2	1	1				
Smithville						1						
St. Catharines				4	7	18	3	18				
St. David												
Middlesex—												
Ailsa Craig					4	13						
Belmont												
Granton						1						
London												
Lambeth												
Lucan												
Ilderton												
Napier						1						
Melbourne		1		1		1	1					
Parkhill												
Poplar Hill				1		4						
Strathroy			1			4						
Muskoka—												
Bracebridge	2		4	2		1		3				
Bala								1				
Glenmount												
Gravenhurst						1						
Huntsville	3	1	2	7			1	7	animal		1	
Severn Bridge				3								
Pt. Sydney												
Sanitarium						1						
Norfolk—												
Delhi					3	3		1				
Langton					1	2		3				
Port Dover				4		3		7				
Port Rowan					1	3	1	1				
Simcoe	9	10	4	13	3	8	7	24				
Waterford	2	1	7	8		13		2				
Vittoria						1						
Teeterville				1								
Lyndoch			1									
Nipissing—												
Schumacher												
Cobalt						6						
Cochrane				1	1	5	4	2				
Copper Cliff									1 dog		1	
Charlton						1						
Conniston						1	2	2				
Englehart												
Haileybury		1	1	1	7	6						
Garson												
Iroquois Falls		5	2			8	1	5				
Ledac							1					
Kirkland Lake												
Mattawa			1		2	5						
Matheson												
North Bay				2	1	6	2	5				1
New Liskeard	53	112	26	77	1	6	3	3				
Bonfield						1		1				
Sturgeon Falls			1	3	2	12						
Sudbury					1	15	1					

OF HEALTH OF ONTARIO AT TORONTO FOR YEAR 1915.—*Continued.*

Milk										Waters		Liquors for License Dept.	Miscellaneous Specimens	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives	Bacteriological											Total Specimens for year	Water	Diphtheria	T. B.	Typhoid	Total Outfits		
Fats	Total Solids			Tubercle Bac.		Pus cells		Count	Extraneous matter	Chemical	Bacterial									Cases	Number of Injections
													4	12				12	8		
														1							
											67		2	119	60	2	37	38	137		
											8			8	11				11		
														17			15		15		
													1	1							
											3			4		2	2	2	6		
											30			30	60				60		
											4			4	2		20		22		
											1			1							
															2				2		
											1			2							
											1			5		6	5	6	17	4	
											1			1							
														5							
														5							
											1			13		12	10	12	34		
														1							
											1			1							
1	1		1								8			12		2			2		
											9			31	6				6		
											4			7	12				12	4	
											3			3	3				3		
											3			4	3				3		
														7		6	10	6	22		
														6							
											1			15						4		
											1			7								
			6						6		4			94		24	10	24	58	30	2	24
														33		4	14	4	22	1		
														1							
														1		2	2	2	6		
														1							
											2			2							
											41			47	41	4	4	4	53		
											45			58	49	24	40	48	161	20	
														1							
														1							
											10			15	12	2	2	2	18	8	
											4			4	2				2		
											11			27	6	14	12	2	34		
											5			5	6				6		
											168			189	229	26	10	24	289	1100	
											6			7		2	2	2	6		
											24			24	18				18		
											3			11		2	2	2	6		
											3			3							
											27		1	45	30			6	36	4	
											3			284	1	402	17	32	452	4	
														2							
														18		20	15	8	43		
											203		3	223	178	28	32	16	254	5	

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tuber-culous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis									
	+	−	+	−	+	−	+	−	Animal	Negri Bodies +	Negri Bodies −	Animal Inocu-lations
Nipissing—Continued.												
Swastika	....	....	....	....	....	1	....	3	.....	.....	.....	.....
Verner	....	....	....	....	1	1	....	....	.....	.....	.....	.....
S. Porcupine	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Whitney	....	....	....	2	....	1	....	1	.....	.....	.....	.....
Northumberland—												
Cobourg	....	....	....	3	4	19	10	11	.....	.....	.....	.....
Colborne	....	....	....	1	....	3	2	1	.....	.....	.....	.....
Campbellford	....	....	....	2	....	1	....	2	.....	.....	.....	.....
Cold Springs	....	....	....	....	....	....	....	1	.....	.....	.....	.....
Brighton	1	1	1	....	3	1	....	2	.....	.....	.....	.....
Grafton	....	....	....	1	....	....	....	1	.....	.....	.....	.....
Castleton	....	....	....	1	1	....	....	....	.....	.....	.....	.....
Roseneath	....	....	....	....	....	1	....	1	.....	.....	.....	.....
Trent River	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Warkworth	....	....	....	....	....	1	....	1	.....	.....	.....	.....
Wooler	....	....	....	....	1	....	....	1	.....	.....	.....	.....
Hastings	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Ontario—												
Claremont	....	1	....	1	....	....	....	....	.....	.....	.....	.....
Brooklyn	....	....	....	....	....	3	....	....	.....	.....	.....	.....
Beaverton	....	....	....	1	....	....	....	....	.....	.....	.....	.....
Broughan	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Cannington	....	....	....	6	1	1	2	1	.....	.....	.....	.....
Oshawa	....	1	....	8	....	5	....	1	.....	.....	.....	.....
Pickering	....	....	....	....	....	....	1	2	.....	.....	.....	.....
Port Perry	....	....	....	1	....	6	2	4	.....	.....	.....	.....
Sunderland	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Saintfield	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Seagrave	....	....	....	1	....	....	....	....	.....	.....	.....	.....
Greenbank	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Uxbridge	....	....	....	....	3	8	....	....	.....	.....	.....	.....
Whitby	....	....	1	1	....	5	....	1	.....	.....	.....	.....
Zephyr	....	....	....	1	....	....	....	1	.....	.....	.....	.....
Oxford—												
Embro	....	....	....	....	....	....	1	....	.....	.....	.....	.....
Bright	....	....	....	1	....	....	....	2	.....	.....	.....	.....
Burgessville	....	....	1	2	1	3	....	....	.....	.....	.....	.....
Beachville	....	....	....	1	....	....	....	1	.....	.....	.....	.....
Drumbo	....	....	....	....	1	1	....	....	.....	.....	.....	.....
Ingersoll	....	....	2	2	2	4	4	7	.....	.....	.....	.....
Norwich	....	....	....	3	....	5	....	....	.....	.....	.....	.....
Otterville	....	....	....	....	1	7	....	....	.....	.....	.....	.....
Princeton	....	....	1	....	1	5	2	2	.....	.....	.....	.....
Plattsville	....	....	....	....	2	6	....	2	.....	.....	.....	.....
Mount Elgin	....	....	....	....	....	1	....	....	.....	.....	.....	.....
Tillsonburg	....	1	1	1	3	4	4	4	.....	.....	.....	.....
Tavistock	....	....	....	....	....	3	1	8	.....	.....	.....	.....
Thamesford	....	....	....	....	....	....	....	....	1 dog	.....	1	.....
Woodstock	....	....	3	6	1	23	3	2	.....	.....	.....	.....
Parry Sound—												
Byng Inlet	....	....	....	3	1	2	....	1	.....	.....	.....	.....
Burks' Falls	....	....	....	3	2	4	6	18	.....	.....	.....	.....
Calendar	....	....	....	....	....	....	1	....	.....	.....	.....	.....
Kearney	1	2	1	5	....	....	1	1	.....	.....	.....	.....
Depot Harbor	....	....	....	3	1	....	....	....	.....	.....	.....	.....
Parry Sound	13	12	12	24	2	7	5	13	.....	.....	.....	.....
Powassan	....	....	....	2	1	5	....	1	.....	.....	.....	.....

OF HEALTH OF ONTARIO AT TORONTO FOR YEAR 1915.—*Continued.*

Milk									Waters		Liquors for License Dept.	Miscellaneous Specimens	Total Specimens for year	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives	Bacteriological				Count	Extraneous matter						Water	Diphtheria	T. B.	Typhoid	Total Outfits		Cases	Number of Injections
Fats	Total Solids	—	Tubercle Bac.	—	Pus cells	—			Chemical	Bacterial											
										4		1	9	3				3			
													2		2	2	2	6			
										4			4	18				18			
													4								
											8	3	58	2				2	65		
										2			9	8				8	8		
										7		11	23	6	24			30	10		
													1				6	6			
										3			12								
										3			5	2	6	5	6	19			
													2		14	12	14	40			
										11			13		6	5	6	17			
										2			2		2			2			
													2								
										3			5		2	2	2	6			
										1			1	2				2			
													2								
													3								
										3			4		12			12			
										3			3						4		
													11		14	12	2	28			
										37		2	54	42	24	30	24	120			
													3						4		
										1			14	13	32	27	16	88	12		
										1			1	4				4			
															2	2	2	6			
													1								
														6				6			
										1			12			10		10			
									1	7		4	20	6		15		21			
													2						12		
										3		1	5		2	2	2	6	8		
													3								
										1			8	6	8	7	8	29			
													2								
										10			12	12		10		22			
													21		24	30		54	4		
										1			9	8	12			20			
										22			30			15		15			
													11						20		
													10								
													1								
										29			47	9	5	10	12	36	10		
													12								
										3			4								
										14			52	22	18	51	30	121	8		
										8		1	16	12				12			
									1	36			70	42	50	19	16	127	26		
										1			2						4		
										4			15	10	36			46	66		
													4								
										9			97	42	36	20	20	118	68		
													9		12	10	12	34			

* Coal.

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tubercolous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		
	+	—	+	—	+	—	+	—	Animal	+	—	Animal Inoculations
Parry Sound—Continued.												
Sprucedale		9		40	4	5		3				
Saliens								1				
South River						3		1				
Sundridge					2	3	2	3				
Peel—												
Alton					1	4		1				
Boulton				5		1		2	dog cat	1	1	
Brampton				1				2	dog		1	
Burnhamthorpe					1							
Cooksville		1		1								
Caledon East				2	1		1	2				
Clarkson								1				
Cheltenham												
Dixey												
Erindale												
Englewood									dog		1	
Mono Road					1	2		1				
Mono Mills												
Port Credit	1	1	1	6				1				
Palgrave		1		2	2	3						
Streetsville				1	1							
Perth—												
Kirkton					3	1						
Attwood			1		2							
Dublin							1					
Listowel		2		1	4	15	1	16				
Milverton					1	1						
Monkton				1		2	1	1				
Mitchell				2					dog	1		
Millbank						2						
Stratford	1	3	6	13	13	27	3	7				
Perth—												
Munroe												
St. Mary's				1		2		1	dog		1	
Peterboro—												
Bailieboro				5		2		2				
Bridgenorth												
Cordova Mines									kitten		1	
Havelock						3		1				
Keene						1		2				
Lakefield			1	1		1	1					
Norwood							1	4				
Peterboro	26	55	21	67	10	12	4	9				
Prescott—												
Curran												
Chute à Blonieau							1					
Fournier								1				
L'Orignal												
Hawkesbury							1	4				
St. Eugene						1						
St. Isidore de Prescott						1						
Vankleek Hill					1	2						
Prince Edward—												
Bloomfield						1						
Consecon			2									
Picton			1	2	2	4		1				
Wellington					3	3						

OF HEALTH OF ONTARIO AT TORONTO FOR THE YEAR 1915.—*Continued.*

Milk										Waters		Liquors for License Dept.	Miscellaneous Specimens	Total Specimens for year	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives		Bacteriological																		
Fats	Total Solids			Tubercle Bac.		Pus cells		Count	Extraneous matter	Chemical	Bacterial				Water	Diphtheria	T. B.	Typhoid	Total Outfits		Cases	Number of Injections
				—	—	—	—															
														61		6	5	18	29	44		
														1						300		
														4			10		10			
														10		6	10	6	22	4		
														6								
											5			15	24				24	2		
											5			9								
														1								
														2								
													1	7						1		
											2			3								
											2			2	2				2			
											4		1	5						1		
											2			2	1				1			
														1								
														4								
													1	1								
														10		18	5	6	29			
														8		24	10	6	40			
														2		2	2	2	6			
													2	6		2	2	2	6			
														3		14	5		19	4	2	24
													1	2						1		
											2		2	43	4	8	22	8	42	5		
													1	3								
														5						16		
											8		3	14	12				12			
											2			4		6	5	6	17		1	24
											27		1	101	24	56	42	8	130	4	1	24
																					1	24
														4	6	2	2	2	12			
														9	1				1			
											1			1								
														1								
														4	12	2	2	2	18			
														3								
														4								
														5								
											2		23	229	2	122	28	44	196	8		
																6	5	6	17			
														1						16		
														1								
											2			2		2			2			
											4			9	12	2	2	2	18			
														1		6	5	6	17			
														1			10		10			
2														5								
														1								
														2								
											4		1	15	6				6			
											1			7								

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tuber-culous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis						Animal	Negri Bodies		Animal Inocu-lations
	+	—	+	—	+	—	+	—		+	—	
Rainy River—												
Barwick												
Charlton						2						
Emo						1						
Dryden												
Kenora						1						
Keewatin						1						
Ft. Francis				1	3	3		1				
North Pines												
Rainy River						5	1	2				
Renfrew—												
Arnprior		1	1		1	3						
Beachburg				1		1						
Craigmount					1	5						
Douglass												
Eganville	1	2	3	4	2	11		1				2
Pembroke												
Renfrew	7	2	4	7	5	12	2	5				
Westmeath			2			1						
Russell—												
Bourget	120	264	16	22	2	8	2	2				
Clarence Creek	2		5	4	1	2						
Navan	3		2	5	1	1	2					
Metcalfe				3		11		3				
Rockland			1	1		5						
Russell					3	4						
Simcoe—												
Alliston				1				1	cat		1	
Angus						1						
Barrie	4	4	3	4	5	28	3	12				
Beeton	24	3	12	6								
Bradford	6	12	10	2		3						
Coldwater			4	1	1	3		5				
Collingwood	2	2	1	5	3	5						
Creemore				2		6		7				
Churchill						6	1					
Cookstown				1	1	7		2				
Edgar			1	3		1						
Elmvale			2	3		2						
Craigvale												
Everett				1		1	1					
Orillia	33	64	21	53	1	13	3	20				
Hillsdale				3				7				
Penetang		4	7	8	6	14	3	5				
Phelpston						5		3				
Midland				1		1			3 dogs	1	2	
Port McNicoll				2								
Stayner					1	2	2	1				
Stroud						4						
Thornton				1		1						
Victoria Harbor				1	2	1	3	3				
Washago												
Waubashene			2	1								
Stormont—												
Cornwall		1	1	2	2	2		3				
Mille Roches	1			2		2	3	1				
Osnabruck Centre					1	2						

OF HEALTH OF ONTARIO AT TORONTO FOR THE YEAR 1915.—*Continued.*

Milk										Waters		Liquors for License Dept.	Miscellaneous Specimens	Total Specimens for year	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives		Bacteriological					Extraneous matter						Water	Diphtheria	T. B.	Typhoid	Total Outfits		Cases	Number of Injections
Fats	Total Solids		—	Tubercle Bac. +	Tubercle Bac. —	Pus cells —	Pus cells —	Count		Chemical	Bacterial											
															6	5	6	17			
														2								
											2			3	2	2	2	6			
											5			5	6				6			
											1			2	2	2	2	6			
														1	2	2	2	6			
											5			13	3			3			
											1			1	2			2			
														8		10		10			
										2				8	6	5	6	17			
														2	2	2	2	6			
														6							
											3			3	2		5	7			
1									2		1			30		14	2	2	18	4		
			1							8	75			84	102				102			
											25			69	36	86	52	14	188			
														3								
											8			444	24	618	60		702	10		
														14		2	2	2	6			
														14	2	18	5	6	31			
														17			15	12	27			
											4			11		44	7	8	59			
											1			8		3			3	4		
														3								
														1								
											8		2	73	20	10	29	34	93	4		
														45	12	18	5	6	41			
													1	34		40	24	10	74			
											1			15		18			18			
8								8			21			55	17	14	10		41			
														15				12	12			
														7			10		10			
											2			13								
														5			10		10			
														7								
											2			2								
														3								
											130		17	355	186	172	30	36	424	4		
											1			11				12	12			
											5		1	53	4	12	25	12	53	4		
														8		12	10	6	28			
														5								
														8	6	24			30			
											1			7		2	2	2	6	4	1	24
														4								
														2								
											4	8		22		14	12	14	40			
											5			5	2				2			
													1	4								
														11						450		
														9						4		
														3								

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tuber-culous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		
	+	—	+	—	+	—	+	—	Animal	+	—	Animal Inoculations
Thunder Bay—												
Port Arthur				2	4	11	2	2				
Fort William								1				
Victoria—												
Bobcaygeon				2		4						
Fenelon Falls				1		2		1				
Kinmount				2	1	1						
Kirkfield												
Lindsay				2	4	12	2	11				
Little Britain			2	5	2	2		4				
Manilla							1	1				
Oakwood				1		1						
Omemee				1		6						
Woodville				1	1	3	3	4				
Waterloo—												
Ayr				4		1	1	4				
Baden						2		2	dog	1		
Doon												
Elmira	5	3	2	1	1	6	4	4				
Galt			4	10	8	18	2	4				
Hespeler	2	1	3	1		4						
Kitchener	172	567	31	181	11	22	5	2				
Linwood						4						
New Hamburg				3		1	1	3				
Preston			1		1	1	1					
St. Jacobs												
Waterloo	8	26	10	22	1	21	3	8				
Wellesley				2	3	4	1	3				
Winterbourne		5										
Welland—												
Bridgeburg				5		4	2	4				
Fenwick			1		1	1	1	1				
Fonthill	1			2	1	1						
Marshville			1		2	1						
Jarvis				1				2				
Niagara Falls			1	2	1	2	1	3				
Port Colborne				2		4	3					
Port Robinson		2	2	3		1						
Ridgeway												
Stevensville					1	2						
Stamford												
Thorold					1							
Welland	3	2	9	7	3	12	1					
Wellington—												
Alma					3	5		6				
Arthur				1	2	3		1				
Conn				3		1	1	1				
Clifford						2						
Elora									1 dog		1	
Erin			1	1		3		5				
Belwood						1						
Drayton				1		2	4	3				
Fergus	1				4	1						
Dorking												
Guelph	1		1	6		9		9	1 dog		1	
Glenallan					3	1						
Hillsburg				1	2	4		3				
Harriston				1		4	1	1				

OF HEALTH OF ONTARIO AT TORONTO FOR YEAR 1915.—*Continued.*

Milk										Waters		Liquors for License Dept.	Miscellaneous Specimens	Total Specimens for year	Outfits sent out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives		Bacteriological																		
Fats	Total Solids	+	—	Tubercle Bac. +	Tubercle Bac. —	Pus cells +	Pus cells —	Count	Extraneous matter	Chemical	Bacterial				Water	Diphtheria	T. B.	Typhoid	Total Outfits		Cases	Number of Injections
...	...	...	...	...	...	...	...	...	...	...	...	...	1	22	...	8	17	8	33	4	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	30	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	6	...	...	10	...	10	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	4	...	8	7	6	21	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	4	...	12	...	...	12	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	2	...	...	...	2	...	...	...
...	...	...	...	...	...	...	...	...	...	...	19	...	3	53	36	12	10	12	70	4	...	...
...	...	...	...	...	...	...	...	...	...	...	3	...	..	18	12	12	15	12	51	16	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	2	...	...	...	...	...	...	...	...
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...	...	...	...	...	...	...	...	...	...	...	...	...	..	12	...	...	...	6	6	24	...	...
...	...	...	...	...	...	...	...	...	...	...	5	...	..	15	1	...	...	...	1	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	5	...	6	5	6	17	...	...	...
...	...	...	...	...	...	...	...	...	...	1	...	...	..	1	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	26	...	32	27	14	73	...	...	...
...	...	...	...	...	...	...	...	...	...	...	2	...	2	50	12	30	25	30	97	4	...	...
...	...	...	...	...	...	...	...	...	...	1	3	...	..	15	2	12	...	...	14	4	...	...
...	...	...	...	...	...	...	...	...	...	19	105	...	7	1122	148	935	100	...	1183	9	...	...
...	...	...	...	...	...	...	...	...	...	...	1	...	..	5	18	...	...	...	18	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	8	...	18	15	12	45	4	2	43
...	...	...	...	...	...	...	...	...	...	...	...	...	1	5	...	...	...	...	...	4	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	12	...	...
...	...	...	...	...	...	...	...	...	...	...	5	...	1	105	6	80	27	14	127	12	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	13	...	...	15	...	15	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	5	...	2	2	2	6	...	...	...
...	...	...	...	...	...	...	...	...	...	...	2	...	..	17	...	12	10	6	28	4	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	5	...	2	2	2	6	...	...	...
...	...	...	...	...	...	...	...	...	...	...	2	...	1	8	1	14	2	2	19	...	...	...
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...	...	...	...	...	...	...	...	...	...	...	2	...	2	13	1	12	5	6	24	4	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	8	...	6	5	6	17	...	...	...
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...	...	...	...	...	...	...	...	...	...	...	1	...	..	1	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	27	...	..	28	45	2	2	2	51	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	..	37	...	20	17	2	39	40	...	...
...	...	...	...	...	...	...	...	...	...	...	3	...	..	17	...	2	22	2	26	...	...	...
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...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	12	...	10	...	22	...	...	...
...	...	...	...	...	...	...	...	...	...	19	195	...	21	262	...	32	2	2	36	...	...	...
...	...	...	...	...	...	...	...	...	...	...	8	...	..	12	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	14	...	..	24	...	...	...	...	...	4	...	...
...	...	...	...	...	...	...	...	...	...	...	3	...	..	10	...	...	10	...	10	...	...	...

* Coal

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD

Municipalities	Diphtheritic swabs				Tuber-culous sputa		Typhoid bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		Animal Inocu-lations
	+	—	+	—	+	—	+	—	Animal	+	—	
Wellington—Continued.												
Moorefield				2								
Mt. Forest					5	8		2	dog		1	
Palmerston	7	6	1	1				2				
Rockwood				1		1		3				
Puslinch												
Wentworth—												
Binbrook				1			1	1				
Lancaster		8		1								
Dundas	5	4	3	4	2	2	2	4				
Hamilton						2	1		3 dogs	1	2	
Freelton				1								
Lynden				2								
Mt. Hope							2					
Stony Creek			1	1								
Waterdown												
Winona				1		1						
York—												
Agincourt				2		3		1				
Aurora				1		3	2		dog		1	
Annedale						1						
Birch Cliff												
Eglinton				2			1					
Gormley												
Fairbank												
Islington			1			3						
Leaside												
Lambton Mills												
Markham				2	2	10		2				
Mimico	65	256	41	264			2	6				
Mount Dennis	1	1		4	1	2		2				
Mount Albert				2	3	10						
King												
Nashville												
Newmarket				1	1	1		2				
Newtonbrook									dog	1		
Long Branch												
Pefferlaw					1							
Queensville						1	3	3				
Richmond Hill					1	1		1				
Roches' Point												
Schomberg				3		2	1	2				
Stouffville		1		2	2							
Sutton West						3		2	dogs	1	1	
Swansea			1	1		1						
Thornhill			1					3	dogs	2	1	
Toronto	30	40	27	127	13	30	14	27	"	10	6	
Todmorden												
Unionville						1						
Weston				6	5	6	1	6				
Westhill												
Willowdale												
York Mills												
	728	1647	468	1570	441	1445	311	808		25	31	3

OF HEALTH OF ONTARIO AT TORONTO FOR YEAR 1915.—*Concluded.*

Milk.										Waters				Total Specimens for year.	Outfits Sent Out					Doses of Anti-Typhoid Vaccine sent out	Pasteur Preventive Treatment	
Food Content		Preservatives		Bacteriological				Extraneous Matter							Water.	Diphtheria.	T. B.	Typhoid	Total Outfits		Cases	Number of Injections.
Fats	Total Solids	+	—	Tubercle Bac +	Tubercle Bac —	Pus Cells —	Count			Chemical	Bacterial	Liquors for License Dept	Miscellaneous Specimens									
..	...	...	...	...	...	...	...	..	..	...	...	...	...	2	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	8	...	...	24	12	...	...	...	12	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	17	...	2	2	2	6	...	...	...
..	...	...	...	...	...	...	...	..	..	...	2	...	...	7	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	1	...	...	1	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	3	4	2	2	2	10	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	9	...	12	...	...	12	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	coal	26	6	20	7	...	33	...	...	...
..	1	...	...	...	...	...	...	..	..	2	8	...	4	21	12	2	2	2	18	8	2	27
..	...	...	...	...	...	...	...	..	..	...	...	...	...	1	...	...	...	...	...	...	...	...
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..	...	...	...	...	...	...	...	..	..	...	...	...	...	2	4	...	...	...	4	...	...	...
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..	...	...	...	...	...	..	...	..	..	...	...	...	...	7	...	...	...	...	...	4	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	1	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	3	...	...	3	1	...	...	...	1	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	3	...	...	...	...	...	16	...	...
..	...	...	...	...	...	...	...	..	..	...	1	...	...	1	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	1	1	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	2	...	...	6	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	4	...	...	4	10	...	...	...	10	...	...	...
..	...	...	...	...	...	...	...	..	..	...	5	...	...	5	3	...	...	...	3	...	...	...
..	...	...	...	...	...	...	...	..	..	...	3	...	coal	19	2	...	...	...	2	...	...	...
..	...	...	...	...	...	...	...	..	..	...	36	...	27	697	14	168	...	...	182	332	...	...
..	...	...	...	...	...	...	...	..	..	...	1	...	2	14	...	2	2	2	6	...	...	...
..	...	...	...	...	...	...	...	..	..	...	3	...	...	18	...	14	22	2	38	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	...	...	...	...	...	...	24	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	...	...	...	...	...	...	...	1	21
..	...	...	...	...	...	...	...	..	..	1	5	...	...	11	...	2	2	2	6	...	...	...
..	...	...	...	...	...	...	...	..	..	...	1	...	...	2	1	...	...	...	1	...	...	...
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1	...	...	...	...	...	...	...	..	..	...	...	...	...	2	...	2	2	2	6	...	...	...
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..	...	...	...	...	...	...	...	..	..	...	5	...	...	8	12	2	2	2	18	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	...	...	14	12	2	28	...	1	10
..	...	...	...	...	...	...	...	..	..	...	...	...	...	8	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	2	...	...	7	...	...	20	...	20	...	...	...
..	...	...	...	...	...	...	...	..	..	...	1	...	...	8	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	3	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	7	...	...	...	...	...	...	7	143
3	...	...	1	...	...	...	...	..	2	107	270	94	801	13	144	20	18	195	130	20	286	
..	...	...	...	...	...	...	...	..	..	...	1	...	...	1	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	...	...	...	...	1	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..	..	24	7	5	60	29	...	...	...	29	...	...	...	...
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..	...	...	...	...	...	...	...	..	..	1	...	...	1	...	...	...	...	...	...	...	...	...
49	7	2	17	...	1	...	...	10	18	70	2583	299	315	10839	2744	5972	3239	2111	14004	5324	52	840

REPORT OF THE BRANCH LABORATORIES OF THE BOARD AT KINGSTON

The Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—I have the honour to submit report of work done in the local Laboratory of the Provincial Board of Health during the year 1915.

In this period 5,445 specimens were examined as per appended table:

Diphtheria:—		
Swabs for Release from Quarantine		429
Positive	133	
Negative	296	
Swabs for Diagnosis		668
Positive	147	
Negative	521	
Sputums for Tubercle Bacilli		967
Positive	274	
Negative	693	
Blood for Typhoid Reaction		781
Positive	235	
Negative	546	
Water for Bacteriological Analysis		934
Milk for Examination (Preservatives, Tubercle Bacilli, etc.)		26
Miscellaneous Samples, including Pus, and particularly Naso-pharyngeal Swabs for Meningococci		1,640
Total		5,445

Despite the furnishing of containers by the Provincial Board nearly one-quarter of the samples sent to the Laboratory still come in outfits improvised by physicians themselves, and about one-third of such samples are unsatisfactory, necessitating a request for another sample, or a warning to pack future samples more securely. It would be a great advantage if the branch laboratories were permitted to send out a limited number of sample outfits in such cases.

The large number of miscellaneous specimens examined were mainly naso-pharyngeal secretions examined for Meningococci, as a number of cases of Epidemic Meningitis occurred among the troops in the spring and early summer at Kingston and Barriefield Camps, with consequent swabbing for detection of carriers.

No samples are chemically analyzed in this Laboratory, but such are forwarded to Central Laboratory.

The work of the Branch Laboratory is increasing yearly, necessitating the employment of more assistants, whom war conditions are making it increasingly difficult to obtain.

Respectfully submitted,

W. T. CONNELL,

Assistant Bacteriologist.

REPORT FROM BRANCH LABORATORIES OF THE PROVINCIAL

Municipalities	Diphtheric Swabs				Tuberculous Sputa		Typhoid Bloods		Rabies Diagnosis			
	Release		Diagnosis						Animal	Negri Bodies		Animal Inoculations
	+	−	+	−	+	−	+	−		+	−	
Algoma—												
Little Current						1	1					
Spragge				1	1							
Spanish Mills					1							
Bruce—												
Paisley				2			6	3				
Carleton—												
Manotick			8	1	1	2						
Richmond					1	2		2				
Vernon				4		5						
Gower N					1							
Ottawa								2				
Westboro					1		2	1				
Metcalfe					1	1	4	2				
Dundas—												
Brinston						1						
Chesterville						2						
Iroquois						1						
Morrisburg				1	4	8	5	10				
Winchester			2	3	4	5		5				
Essex—												
Essex		1				6		1				
Leamington		6						1				
Frontenac—												
Harrowsmith	1	3		1	1	2		5				
Portsmouth				1	86	29	7	29				
Kingston	92	180	50	349	52	355	56	243				
Sharbot Lake				3	3	1	1	4				
Sydenham				1	1	2	7	2				
Verona					3	2		4				
Arden						2						
Barriefield			1	18								
Inverary												
Wolfe Island								3				
Glengarry—												
Alexandria						1						
Dalkeith					3	4		1				
Lancaster	3	8	9	2		2						
Maxville					5	2						
Williamstown					5	3						
Dalhousie Mills						1						
Grenville—												
Cardinal												
Kemptville				2		1		2				
Merrickville					5	2		1				
Prescott	1	5	3		4	8	7	6				
Spencerville					2	2	1					
Jaspar			2	1								
Bishop's Mills								1				
Hastings—												
Belleville	3	7	12	10	6	10	6	7				
Bancroft					4	4		1				
Foxboro					1	3	3					
Madoc					3	1	2	2				
Marlbank					1	3	1	4				
Roslin					1	2						
Stirling						1						
Shannonville				1		3	1	2				

BOARD OF HEALTH OF ONTARIO AT KINGSTON FOR THE YEAR 1915.

Milk									Waters				
Food Content		Preservatives	Bacteriological					Extraneous Matter			Liquors for License Dept.	Miscellaneous Specimens	Total for Year
			Tubercle Bac.		Pus Cells				Chemical	Bacterial			
Fats	Total Solids	—	—		—		Count						
													2
										2			4
										1			2
													11
													12
													5
										1			10
													1
													2
													4
													8
													1
													2
										2			3
										11		1	40
										1			20
													8
													7
										9			22
										36			188
			1		1	1	1	1		256		687	1,917
										2			14
										5			18
										4			13
													2
										65		509	593
										4			4
													3
										3			4
													8
												2	26
													7
										2			10
													1
										9			9
													5
													8
										13			47
													5
								1					4
													1
										7		409	475
													9
													7
													8
													9
												1	4
													1
												1	8

REPORT FROM BRANCH LABORATORIES OF THE PROVINCIAL

Municipality	Diphtheria Swabs				Tuberculous Sputa		Typhoid Bloods		Rabies Diagnosis			
	Release		Diagnosis						Animal	Negri Bodies		Animal Inoculations
	+	—	+	—	+	—	—	+		+	—	
Hastings—Continued.												
Hastings				1								
Tweed						4						
Trenton					1	1						
Deseronto			1	1								
Huron—												
Wingham		1	2	1	1	6	1	4				
Lanark—												
Carleton Place			7	9	3	3	5	5				
Perth						6		2				
Smith's Falls		1	5	11	1	13	4	7				
Lanark				1		2						
Almonte												
Leeds—												
Brockville	7	11	6	1	8	13	45	34				
Gananoque				2	6	22	5	9				
Lansdowne			4	18	1	3	9	15				
Lyn					1	1						
Mallorytown				7				8				
Newboro					2	2						
Westport	1	3		3		1	1	1				
Athens						2						
Portland						1						
Elgin								1				
Lennox & Addington—												
Bath					2	3	2	2				
Napanee	8	5	9	6	2	8	3	13				
Newburgh				3	2	2	1	6				
Odessa					1	2	2	3				
Tamworth						2	4	4				
Yarker				1	3	7	1	5				
Dorland						1						
Northumberland—												
Campbellford					2	1	1	4				
Castleton		3	1		1	2						
Cobourg							6	2				
Manitoulin—												
Gore Bay						1						
Peterboro—												
Peterboro						2	10	4				
Prescott—												
St. Eugenie						3						
Fournier	1		1	2	1	11		5				
Hawkesbury				1	1	3		2				
Vankleek Hill		1	1	1	1	1						
Clarence Creek			1									
Curran												
Prince Edward—												
Picton					3	12		1				
Renfrew—												
Cobden				1		11	2	4				
Arnprior				2	2	2						
Douglas			1	3	4	9						
Pembroke		1	4	5	3	11						
Renfrew	2	8	7	20	7	11	2	15				
Westmeath			1					2				
Calabogie							1					

BOARD OF HEALTH OF ONTARIO AT KINGSTON FOR THE YEAR 1915—*Continued.*

Milk										Waters.				
Food Content		Preservatives		Bacteriological										
Fats	Total Solids		—	Tubercle Bac.	—	Pus Cells	—	Count	Extraneous Matter	Chemical	Bacterial	Liquor for License Dept.	Miscellaneous Specimens	Total for year
														1
														4
													1	3
														2
														16
													3	35
									4		3			15
														42
														3
											1			1
					4		4	4	4		286		11	438
											20			64
														50
														2
														15
											6		1	11
											6			16
														2
														1
														1
											4			13
											34			88
											1			15
														8
											4		2	14
											20			37
														1
														8
														7
											2			10
														1
											2			18
														3
														21
														7
														5
														1
											4			4
											10		5	31
											17			35
											14			20
														17
													3	27
											35			107
														3
														1

REPORT FROM BRANCH LABORATORIES OF THE PROVINCIAL

Municipalities	Diphtheric Swabs				Tuberculous Sputa		Typhoid Bloods		Rabies Diagnosis			
	Release		Diognosis						Animal	Negri		Animal Inoculations
	+	−	+	−	+	−	+	−		+	−	
Russell—												
Metcalfe	....	....	....	1	1	6	5	17	.....	....	....	.....
Bourget	13	49	4	6	.....	.....	....	.....	.....	....	....	.....
Simcoe—												
Barrie	....	....	1	1	2	5	5	8	.....	....	....	.....
Stormont—												
Aultsville	....	....	....	.....	.....	2	....	.....	.....	....	....	.....
Avonmore	....	....	....	.....	.....	.....	....	.....	.....	....	....	.....
Cornwall	....	1	1	5	9	3	9	13	.....	....	....	.....
Mille Roches	....	....	....	.....	.....	.....	....	.....	.....	....	....	.....
Newington	1	2	3	7	2	9	1	6	.....	....	....	.....
Finch	....	....	....	.....	.....	2	....	.....	.....	....	....	.....
Thunder Bay—												
Port Arthur	....	....	....	.....	.....	.....	....	.....	.....	....	....	.....
Victoria—												
Linsay	....	....	....	.....	.....	1	....	.....	.....	....	....	.....
.....	133	296	147	521	274	693	235	546	.....	....	....	.....

BOARD OF HEALTH OF ONTARIO AT KINGSTON FOR THE YEAR 1915 —*Concluded.*

Milk										Waters				
Food Content		Preservatives		Bacteriological										
				Tubercle Bac.		Pus Cells								
Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Chemical	Bacterial	Liquors for License Dept.	Miscellaneous Specimens	Total for Year
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	.....	....	3	33
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	.....	....	....	72
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	.....	....	....	22
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	.....	....	....	2
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	1	....	....	1
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	74	....	....	65
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	5	....	....	5
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	.....	....	....	31
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	.....	....	....	2
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	.....	....	....	.....
.....	.....	.....	.....	.....	.....	.....	....	.....	....	.....	2	....	1	4
.....	.....	.....	.....	.....	5	1	5	6	9	.....	934	....	1640	5,445

REPORT OF THE BRANCH LABORATORIES OF THE BOARD AT LONDON (INSTITUTE OF PUBLIC HEALTH)

The number of laboratory examinations made by the Branch Laboratory of the Provincial Board of Health at London (Institute of Public Health) in 1915 shows a marked increase over 1914. The increase was 189 per cent., *i.e.*, nearly three times as many in 1915 as in 1914. There has also been an increase of 26 per cent. in the number of communities served.

A comparative summary of the work for the two years is as follows:

Examination.	1914	1915	Increase
Diphtheria Swabs	460	1,472	220%
Tuberculous Sputa	268	484	84%
Typhoid Blood	127	243	91%
Milk (samples examined for fats and preservatives)	118	377	115%
Milk (Bacteriological Analysis)	0	125	.....
Water (Chemical Analysis)	55	152	189%
Water (Bacteriological Analysis)	43	155	267%
Total	1,074	3,008	189%
Communities served	65	80	26%

H. W. Hill,

Director.

REPORT FROM BRANCH LABORATORIES OF THE PROVINCIAL BOARD
(Institute of

Municipalities	Diphtheritic Swabs				Tuberculous Sputa		Typhoid Bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		
	+	—	+	—	+	—	+	—	Animal	+	—	Animal Inoculations
Adelaide						3		1				
Appin					1	1		1				
Arkona					2			1				
Aylmer								1				
Beachville												
Belgrave		1			2							
Belmont					2	1						
Belle River				1								
Berlin								6				
Blenheim					5	8	3	2				
Blyth		3		1								
Brigden					2	1						
Burlington				1		1						
Byron						9						
Camlachie				1		6						
Chatham		7	5	4	6	12		6				
Clinton							2					
Comber			1	5								
Courtright						1						
Crediton		2		1								
Dorchester							1	2				
Dresden						2						
Dutton			1		1	3						
Exeter					1			1				
Ford City			1	3			1					
Fort William								1				
Glencoe				3	3	10						
Granton						1	2	7				
Harrietsville												
Harriston				1								
Harrow				1			1					
Hyde Park						1						
Ingersoll			2	1		5		3				
Innerkip				1								
Inwood		2	1	2		4		2				
Kingsville				2				1				
Kamoka					1							
Lakeside				1		1						
Lambeth					1	3						
Lawrence St.						1						
Listowel						1	1	2				
London	89	561	77	542	58	256	38	81				
Lucknow					2	1						
Lobo												
Lucan		1										

OF HEALTH OF ONTARIO AT LONDON, FOR THE YEAR 1915.
Public Health.) .

Milk										Waters				
Food Content		Preservatives		Bacteriological										
Fats	Total Solids	—	—	Tubercle Bac —	Tubercle Bac —	Pus Cells —	Pus Cells —	Count	Extraneous Matter	Chemical	Bacterial	Liquors for License Dept.	Miscellaneous Specimens	Total for year
														4
										1	1			5
														3
														1
										3	3			6
														3
														3
														1
										4	4			14
2										2	2			24
														4
														3
														2
														9
														7
										18	18			76
														2
														6
										1	1			3
														3
														3
														2
														5
														2
														5
														1
										1	1			18
														10
										1	1			2
														1
														2
														1
										11	11			33
														1
														11
											6			13
														1
														2
										1	1			6
														1
														4
234		6	131					125		70	69			2,337
														3
										2	2			4
														1

REPORT FROM BRANCH LABORATORIES OF THE PROVINIAL BOARD
(Institute of

Municipalities	Diphtheritic Swabs				Tuberculous Sputa		Typhoid Bloods		Rabies Diagnosis			
	Release		Diagnosis							Negri Bodies		
	+	—	+	—	+	—	+	—	Animal	+	—	Animal Inoculations
Merlin	2	3	....	.....	.....	.....	1	.....	.....	....	....	.....
Melburne	....	1	....	.....	.....	.....	....	.....	.....	....	....	.....
Mt. Brydges	....	....	....	.....	.....	5	....	.....	.....	....	....	.....
Mt. Elgin	....	....	....	.....	.....	.....	....	.....	.....	....	....	.....
Napier	....	....	....	.....	.....	.....	3	.....	.....	....	....	.....
Newbury	....	....	....	.....	1	1	....	.....	.....	....	....	.....
Parkhill	....	1	....	.....	.....	.....	....	1	.....	....	....	.....
Petrolia	....	1	....	3	.....	.....	1	.....	.....	....	....	.....
Poplar Hill	....	....	....	1	.....	2	....	.....	.....	....	....	.....
Preston	....	....	....	.....	.....	1	....	.....	.....	....	....	.....
Ridgetown	....	....	....	.....	.....	7	....	7	.....	....	....	.....
St. Mary's	....	....	1	5	1	.....	....	.....	.....	....	....	.....
Sandwich	....	1	....	2	.....	.....	....	1	.....	....	....	.....
St. Thomas	....	....	....	.....	.....	1	....	6	.....	....	....	.....
Sarnia	....	1	....	1	.....	.....	....	.....	.....	....	....	.....
Sombra	....	....	....	4	.....	.....	1	4	.....	....	....	.....
Southampton	....	....	....	.....	.....	1	....	.....	.....	....	....	.....
Stratford	....	2	1	1	1	1	....	3	.....	....	....	.....
Strathroy	....	....	....	.....	.....	1	....	1	.....	....	....	.....
Tecumseh	....	1	....	4	.....	.....	....	2	.....	....	....	.....
Tilbury	....	....	....	.....	.....	.....	1	1	.....	....	....	.....
Tillsonburg	....	....	....	2	.....	.....	....	.....	.....	....	....	.....
Thamesville	....	....	....	.....	.....	2	....	2	.....	....	....	.....
Thorndale	....	....	....	.....	1	1	....	.....	.....	....	....	.....
Walkerville	....	....	....	.....	.....	1	1	2	.....	....	....	.....
Wallaceburg	....	....	1	2	.....	.....	....	1	.....	....	....	.....
Wallacetown	....	....	....	2	.....	.....	1	.....	.....	....	....	.....
Waterloo	....	....	....	.....	1	2	4	.....	.....	....	....	.....
Watford	....	....	....	.....	.....	3	2	1	.....	....	....	.....
West Lorne	....	....	....	3	.....	2	....	.....	.....	....	....	.....
Wheatley	....	....	....	.....	.....	2	....	2	.....	....	....	.....
Windsor	8	10	5	44	1	8	3	8	.....	....	....	.....
Woodstock	7	8	7	12	3	11	2	9	.....	....	....	.....
Wyoming	....	....	....	.....	.....	1	....	5	.....	....	....	.....
Wingham	....	....	....	.....	1	2	....	.....	.....	....	....	.....
	106	606	103	657	97	387	68	175	.....	....	....	.....

OF HEALTH OF ONTARIO AT LONDON, FOR THE YEAR 1915.—*Continued.*
Public Health.)

Milk										Waters		Liquors for License Dept.	Miscellaneous Specimens	Total for Year
Food Content		Preservatives		Bacteriological										
Fats	Total Solids	+	—	Tubercle Bac. +	Tubercle Bac. —	Pus Cells +	Pus Cells —	Count	Extraneous Matter	Chemical	Bacterial			
														6
														1
										1	1			7
										12	12			24
														3
														2
										2	2			6
										4	3			12
														3
														1
										2	1			17
														7
														4
														7
														2
														9
														1
										3	3			15
										1	1			4
										1	1			9
										2	2			6
														2
														4
														2
														4
														4
										1	1			5
														7
										5	5			16
														5
										1	1			6
														87
										2	2			63
														6
														3
240		6	131					125		152	155			3008

Provincial Board of Health of Ontario Experimental Station.

BULLETIN No. 4.

AN EXPERIMENT WITH A NON-FLUSH CHEMICAL CLOSET.

By F. W. WARD, B.A.Sc.

REPORT UPON RESULTS OBTAINED BY THE CITY OF TORONTO WITH BRUSH FILTER MEDIA IN SPRINKLING FILTERS.

THE EXPERIMENTAL STATION OF THE PROVINCIAL BOARD OF HEALTH.

BULLETIN NO. 4.

To the Chairman and Members, Provincial Board of Health, Ontario:

GENTLEMEN,—I have the honour to submit herewith Bulletin No. 4 of the Experimental Station. The Bulletin is not extensive this year, as military service interfered with the analytical work of the plant in the summer and fall of 1915. Captain DeLaporte during that period had charge of the water supply at Niagara Camp, under Major J. W. S. McCullough.

The operation of a non-flush chemical closet was investigated, and a report is included herewith.

The Board was interested in the results obtained in connection with the use of brush mattresses as media in the sprinkling filters of the North Toronto Sewage Disposal Plant, and a request was made to the Department of Works of the City of Toronto for a report upon the operation. The report is published herein, as is also a table showing the results of a series of analyses carried on by the Board during the months of March and April, 1915, upon the same filters.

F. A. DALLYN,

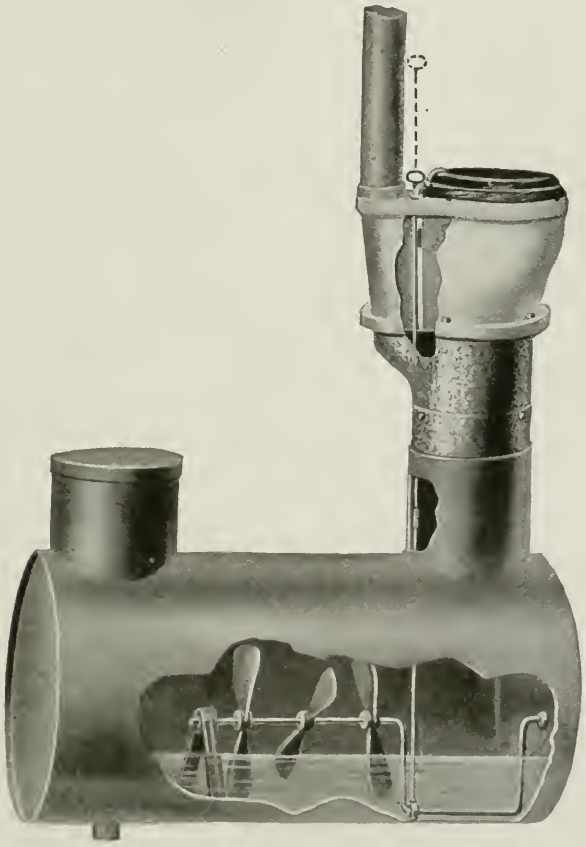
Provincial Sanitary Engineer.

REPORT UPON THE OPERATION OF A NON-FLUSH CHEMICAL CLOSET.

By F. W. Ward, B.A.Sc.

The abolishment of out-door privies for schools and other public places and the substitution of chemical closets therefor is to be recommended. Various forms of non-flush closets are being put on the market to satisfy the demand of those who desire sanitary conveniences in their homes and are unable to instal flush closets. A non-flush chemical closet (supplied by the Kaustine Company) was installed at the Experimental Station for investigation and proved eminently satisfactory.

The outfit consists of a white porcelain bowl, a cylindrical iron tank of 100 gallons capacity, sufficient white enamel pipe for ventilation purposes and 30 lbs. of Kaustine. The illustration shows the system as installed.



The bowl is so constructed that solids do not strike the bowl but fall directly into the tank below. The chemical charge of Kaustine was thirty pounds. On analysis the Kaustine proved to be an electrolytic caustic soda. A series of experiments showed that twenty-four hours after the addition of faecal matter all

traces of bacterial life had disappeared, the solids had been digested and only a small amount of floculent sludge was left out of solution. During the reaction a small amount of ammonia gas was given off but the efficient ventilation prevented the escape of any odour into the room.

The solution in the tank contained a certain percentage of potash, phosphoric acid and nitrogen which are valuable as fertilizers. Analyses of the solution in the tank showed that in 100 gallons of the mixture there were:

¼ pound of potash as K_2O.
⅓ pound of phosphorous as P_2O_5.
⅛ pound of Nitrogen.

These were all in a form immediately available for plant food and should prove extremely valuable as a fertilizer after the caustic solution had been neutralized either by exposure to the air or by the use of acid.

If the charge of chemical is not maintained this system will be a nuisance.

REPORT UPON THE USE OF BRUSH MATTRESSES AS MEDIA IN SPRINKLING FILTERS—NORTH TORONTO SEWAGE DISPOSAL PLANT.

Upon request of the Board the following report has been very kindly forwarded by the Department of Works of the City of Toronto, upon the use of brush filter media in the North Toronto Sprinkling Filters:

J. W. S. McCullough, Esq., M.D., Chief Officer, Provincial Board of Health, Parliament Buildings, City.

Dear Sir,—In response to your verbal request to Mr. Worthington, regarding information in connection with the brushwood filters installed at North Toronto, I beg to advise that, in the early part of 1914, it was found that some of the filters in North Toronto Disposal Works required cleaning out and refilling. We, therefore, decided to experiment with brushwood as sprinkling media. We secured sufficient brushwood from vacant lots near by and had the same cut before the leaves appeared.

The size of the filter which we intended to experiment with was 50 feet in diameter, and in the centre of same was a space 10 feet in diameter which contained the feed pipe to the revolving sprinklers. To fill the filter to a depth of 5 ft. 6 in. it required 200 wedge-shaped mattresses of 2 cubic yards each. These mattresses were made by placing the loose brush in wooden boxes of the required shape and pressing it down with a follower on a long lever. Before the pressure was released the bundles were wired down. The mattresses when finished were approximately 2 feet thick and required a pressure of 80 lbs. per square foot to consolidate the brushwood. The cost of making these and placing same was approximately $1.00 per cubic yard.

On June 3rd, 1914, the filter was completed and the sewage was allowed to enter at the rate of 2,000,000 gallons per acre per day. From that date to the present time it has been in continuous operation night and day.

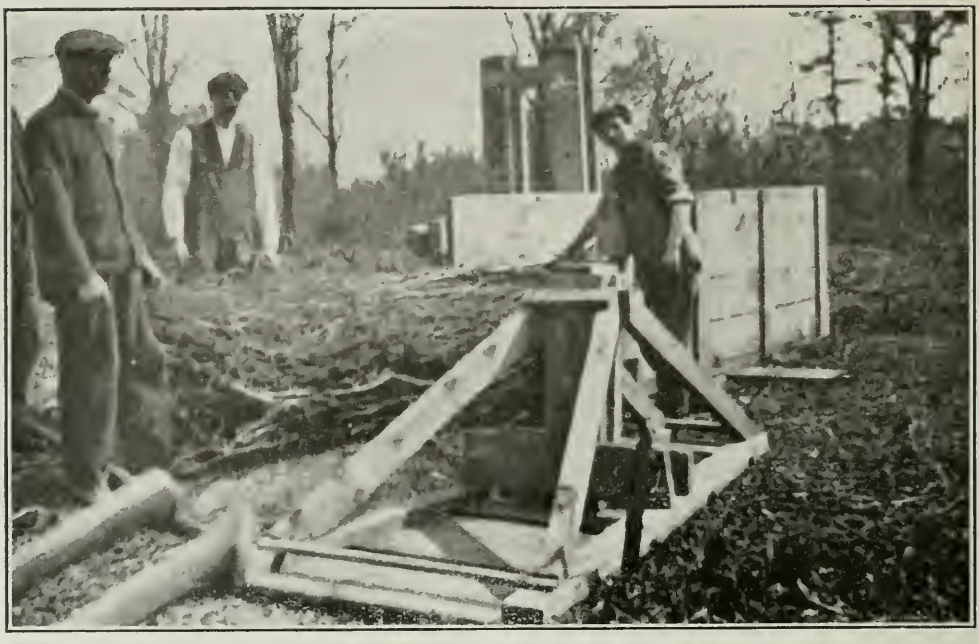
A "V" notch weir, with an automatic recorder, was installed in order to keep accurate measure of the flow.

After two months operation the filter bed appeared to have ripened and was giving good results so it was decided to increase the flow in order to find out the limitations of the new filter. Therefore, the rate was subsequently increased from time to time, and the following is a record of same, viz.:

June to August, 1914	per acre per day	.....	2,000,000 gals.
August to October, 1914	" "	.....	3,000,000 "
October to November, 1914	" "	.....	4,000,000 "
November to December, 1914	" "	.....	4,500,000 "
December to February, 1915	" "	.....	5,000,000 "
February to April, 1915	" "	.....	5,500,000 "
April to September, 1915	" "	.....	6,000,000 "
September to December, 1915	" "	.....	6,500,000 "
December to July, 1916	" "	.....	6,500,000 "
July to November, 1916	" "	.....	6,900,000 "

The effluent from this filter has always been very satisfactory being clear and nonputrescible.

After two and one-half years' operation the brushwood shows no signs of rotting or breaking down, but has gradually compacted down until the depth of the bed is now about 4 ft. 3 in. Taking into consideration the fact that we have at present



Making Brush Mattress (North Toronto Sewage Disposal Plant).

Pressing Brush Mattress (North Toronto Sewage Disposal Plant).

Sprinkling Filter, showing Brush Media in place (North Toronto Sewage Disposal Plant).

only a little over 4 feet of filter medium the average rate of treatment of 6,900,000 gallons per acre per day is remarkably good. (Plate 3.)

I would like to point out in passing that we have taken a series of temperatures in the filter, and find that the temperature of the air taken about 4 feet above the filter has seldom fallen below 36 degrees Fahr. in the coldest winter weather. This may have some bearing on the efficiency of the filter.

You will see from the above that this experiment has proven a success, and it has an advantage over any other filter medium in cost.

I am attaching a copy of Dr. Adams' report of the analysis of the effluents from June, 1914, to October, 1916, inclusive. You will note that the effluent from the brush filter is in some respects only slightly inferior to that from the slag filter, which has been kept under observation alongside of it. However, this latter one is only worked at the rate of 2,000,000 gallons per acre per day.

Comparing the results of, say the last six months, with previous results, it will be seen that, although the sewage has got stronger in character, the effluent, as regards putrescibility, is as good as it ever has been, notwithstanding the increased rate of working.

Trusting this information will be satisfactory, I am,

Yours truly,

R. C. Harris,

Commissioner of Works.

LEASIDE SEWAGE—MONTHLY AVERAGE FOR 1915.

Month.	Distributing Chamber.			Brush Filter.				Slag Filter.			
	Free Amm.	Alb. Amm.	Putre.	Free Amm.	Alb. Amm.	Putre.	% Removal Susp. Solids.	Free Amm.	Alb. Amm.	Putres.	% Removal Susp. Solids.
January	13.2	2.3	21	10.6	1.45	95	.....	6.3	1.26	99	.....
February	9.75	2.15	50	8.3	1.7	99.9	.....	5.47	1.73	100	.....
March	7.3	1.88	48	7	1.34	100	.....	2.35	.97	100	.....
April	10.9	2.3	30	9.5	1.5	99	.....	4.36	1.25	100	.....
May	13.9	3.5	30	12.9	1.6	96	.....	5.8	1.31	99	.....
June	20.5	4.9	21	19.4	2.6	68	.....	8.0	1.7	90	.....
July	14.9	3.55	21	12.1	1.64	98	.....	5.7	1.7	95	.....
August	9.6	2.33	45	7.4	1.2	100	100	2	.6	100	100
September	10.17	2.46	32	7.5	1.18	99.5	.....	1.1	.42	100	.....
October	13.2	2.82	39	9.9	1.1	100	.....	1.6	.4	100	.....
November	15.5	3.0	21	12.9	1.48	98	.....	2.8	.69	100	.....
December	12.9	3.4	23	11.8	1.8	93	.....	2.5	1.4	99	.....
	Oxygen consumed.....7.4			Oxygen Consumed.....3.8				Oxygen Consumed.....3.4			

LEASIDE SEWAGE DISPOSAL WORKS—AVERAGE MONTHLY ANALYSES, 1916.

Month, 1916.	Raw Sewage.			Distributing Chamber.				Brush Filter.				Slag Filter.			
	Free NH_3.	Alb. NH_3.	Nitrates.	Free NH_3.	Alb. NH_3.	Putres.	Nitrates.	Free NH_3.	Alb. NH_3.	Putres.	Nitrates.	Free NH_3.	Alb. NH_3.	Putres.	Nitrates.
January	.....	.....	.....	8.9	3.0	41	.....	7.7	1.55	84	.....	3.43	1.36	97	.....
February	.....	.....	.....	14.8	3.6	33	.....	14	1.8	84	.....	7.7	1.7	99	.....
March	15.4	4.6	1.7	12.1	2.81	28	1.8	10.9	1.4	90	2.1	7.8	1.2	97	5.8
April	9·6	3.08	3.03	8.56	2.5	35	3.2	8.56	1.25	99	3	5.44	1.06	100	6.2
May	8.3	4.2	.....	7.8	2.5	42	.....	6.8	1.4	99	.....	5.1	1.2	100	.....
June	17.9	4.7	.....	13.8	2.7	50	.....	12.3	2.5	100	.....	10	2.6	100	.....
July	26.9	8.3	.....	22.3	4.5	30	.....	19.1	2.7	99.2	.....	14.6	2.7	100	.....
August	37.8	7.5	.....	34.6	4.1	30	.....	26.8	2.5	100	.....	16.9	2.4	100	.....
September	43	11.58	.....	34.5	5.57	30	.....	26.2	2.6	100	.....	19.1	2.35	100	.....
October	32	11.25	.....	21	4.25	30	.....	10.5	2.75	100	.....	2.5	2	100	.....

Further Data re Brushwood Filters.

During the months of March and April, 1915, the Provincial Board of Health undertook a series of analyses of the effluents of the sprinkling filters at North Toronto. The results obtained corroborated in every way those of the city authorities, and were so promising that it was deemed advisable to call the attention of the sanitary engineers throughout the Province to the use of this media for sprinkling filters. The results are appended below.

REPORT SHEET, PROVINCIAL BOARD OF HEALTH, ONTARIO.

Analysis of Leaside Sewage.

Average of Daily Analyses extending over 1 month—March 15th to April 15th, 1915.

Source.	Parts per Million.					Rate of Flow.
	Nitrogen.				Oxygen Consumed.	
	Free Ammonia.	Alb. Ammonia.	Nitrites.	Nitrates.		
Raw Sewage	15	10	0.25	0.26	46	
Sedimentation Chamber	14	9	0.20	0.35	34	
Brushwood Filter.	11	4	0.29	0.96	12	5,500,000 gals. per acre per day.
Slag Filter.....	5.6	2.4	0.35	1.42	10	2,000,000 gals. per acre per day.

A. V. DeLaporte,

Chemist in charge of the Experimental Station.

APPENDIX "A"

APPENDIX "A"

The reports appearing in this Appendix were received from the Secretaries of the Local Boards of Health of the respective cities and towns of the Province of Ontario, in conformity with section 23, ss. 3, of the Public Health Act, and have been edited by the Secretary of the Board.

BERLIN.

DR. JOHN MCGILLAWEE, M.O.H.

There were 220 deaths registered during the year, including fourteen from tuberculosis and sixteen from cancer. There were seventy-five cases of diphtheria, with eight deaths; thirty-eight of these cases were treated at the Diphtheria Hospital, and there is one case there at present. There were several cases of measles, with no deaths. There was one case of scarlet fever and one case of smallpox, but no deaths from either. There were five cases of typhoid, but no deaths.

The milk tests have been, on the whole, satisfactory. A milk by-law has been submitted to the City Council, and is still awaiting its approval. During the year the Board has visited all the dairies supplying milk to the city, accompanied by a veterinary, who reports favourably on the herds.

In view of the prevalence of bovine tuberculosis over the whole Dominion, some safeguard should be given the public against the disease, and experience has shown that certified milk, or proper pasteurization, is the only safeguard, as far as milk is concerned.

The latest reports on the city water have been good. The Water Commission has found a supply of artesian well water at Bridgeport, which, if brought into the city, as the Water Commissioners hope to do, will render the use of chlorinated water unnecessary. Chlorinated water, although somewhat unpalatable, is pronounced by authorities on the subject not to be injurious to health.

Through the completion of two up-to-date abattoirs, and with the co-operation of the Board of Trade, meat inspection has become possible, and we may look forward to the further protection of the health of the citizens in the near future.

The School Board has wisely employed a school nurse, with very satisfactory results.

CHATHAM.

DR. C. R. CHARTERIS, M.O.H.

I hereby beg to submit the Health Officer's Annual Report for the year ending December 1st, 1915. I regret that this report will not be as full as it might be, as I have been in office only two months, and I have had to gather the data from outside sources.

Contagious Diseases.—The Act respecting contagious diseases is very explicit, and I believe is fairly well observed by the people, although we have had some instances where disease has spread by reason of carelessness in not calling medical attendance as early as should have been done; some people seemingly think children's diseases are a matter of necessity and consequently must be endured. Such should not be the case; it is much better to prevent disease than to allow it to progress and cause suffering and, in many instances, death. Too much care cannot be taken by parents of their children, and any who are complaining of sore throats or have a rash on their bodies should be examined by physicians for proper diagnosis of diphtheria or scarlet fever or measles, the most deadly of all children's diseases. Care along this line will no doubt prevent an epidemic, or at any rate lessen greatly the number of cases in a community. Prior to my appointment there had been reported two hundred and two cases of measles, thirty-two of diphtheria and one of scarlet fever. Since my appointment, October 1st, there have been reported diphtheria, 9 cases, no deaths; chickenpox, 3 cases, no deaths; measles, 1 case, no deaths; typhoid fever, 1 case, no deaths.

Vital Statistics.—Births, 245; marriages, 172; deaths, 194.

We are endeavouring to have the Milk By-law generally observed, and I hope we will have matters along this line in good condition at an early date.

FORT WILLIAM.

DR. E. B. OLIVER, M.O.H.

In accordance with the provisions of the Ontario Public Health Act, I beg to submit my Annual Report for the year ending October 31st, 1915.

Vital Statistics.

Estimated population	20,800
Death rate per 1,000 population (including still births)	13.31
Death rate per 1,000 population (excluding still births)	11.78
Birth rate per 1,000 population (excluding still births)	51.44
Infant mortality rate per 1,000 births	85.05
Percentage of decedents under one year to total mortality (excluding still births)	35.10

An important forward step has been the opening of an abattoir by the Board of Health, the operations of which will be found under the division of the Food and Dairy Inspector.

In accordance with the regulations laid down in the fall of 1914 by the Provincial Board of Health regarding the construction of manure boxes, I have endeavoured to have every manure box in the city constructed to meet these regulations. There are in all three hundred and seventy-five manure boxes, and I believe practically all of them meet the requirements.

Particular attention was paid the privies, to see that they were flyproof and kept in a sanitary condition. This has been a difficult task, particularly in the coal dock section, as in many cases the people did not have enough money to make the needed repairs. The co-operation of the Superintendent of the Cleansing Department has been most helpful in this matter. The average citizen, too, has in most cases gladly carried out the improvements suggested by the department. I regret that no progress has been made in reducing the number of privies.

I would draw your attention to the fact that sewers were laid last year on Minnesota, McMillan, Mountain and Superior Streets, at a cost of $8,120.00. There are on these streets one hundred and seventeen houses, but only thirteen are connected to the sewer.

Seventeen hundred and sixty-two notices were sent out during the year. Reports that follow from the Inspectors will detail these. Two hundred and seven complaints were received.

An analysis of our vital statistics shows our death rate to be .22 higher than last year. This can be accounted for in this way. Last year the percentage of decedents under one year was 29.96. This year it is 37.14. But the birth rate increased despite a general decrease in population, and the death rate is always higher in the first year of life than in other years.

There is a great reduction in the infant mortality rate. These are the statistics:

1914. Infant mortality rate per 1,000 births	116.80
1915. Infant mortality rate per 1,000 births	85.05

There were nine deaths from accidental drowning, as against one last year. Traumatism of various kinds claimed seventeen as against ten last year.

It is with regret that I have to state that deaths from tuberculosis were over two hundred and seventy-five per cent. greater than last year—twenty-three as against nine. There were twenty-eight cases reported and twenty-three deaths. This is nothing short of a calamity to the municipality. I cannot too strongly urge upon you the necessity of taking some steps looking to the eventual erection of a sanitarium for these unfortunate victims of the great white plague. We should at least as a preliminary have a clinic established and a nurse to visit these cases. The visiting nurse is the only one who can go into the homes and by her interest teach those affected the necessary preventive measures. She could send all contact suspects to the clinic, and thus get many cases in their incipiency. As in former years, the McKellar Hospital has cared for many of the cases.

An exhibit at the West Algoma Agricultural Fair in September was of most educative value.

In April Miss K. Spearing very kindly offered to give a series of talks to the mothers of the coal dock section. Mr. Shaver, Superintendent of the Wesley Institute, very kindly offered the use of their hall for these talks. The Board of Health furnished the literature.

The subjects were as follows:

May 6th.—Care of the Baby and General Health.
May 13th.—Bathing and the Value of Water.
May 20th.—Clothing and Cleanliness.
May 27th.—Sleep and Rest.
June 4th.—The Special Senses of the Baby.
June 11th.—Feeding the Baby.
June 18th.—What Makes the Baby Sick.
June 25th.—First Care of the Sick Baby.
July 2nd.—The Mother's Care of Herself.
July 9th.—The Effect of Hot Weather.

These talks were well attended and were very much of a help.

I might add that Miss Spearing has at all times co-operated in our work.

Our new Public Health By-law, known as Schedule "B" of the Public Health Act, was passed by the Council in May, and later approved by the Provincial Board of Health. In conjunction with our excellent Public Health Act this gives us a perfect law under which to work.

Communicable Diseases.

Smallpox.—During the year we had eight cases of smallpox reported. All these were directly imported. One was a railroad man who contracted the disease from a travelling Chinaman. A case was brought in from Fort Frances. Those developing later in the year were the result of contact from a case brought in from Manitoba. Fortunately all cases were mild. All but one were unvaccinated persons. The vaccinated case was an adult who had been vaccinated in childhood.

Scarlet Fever.—We were comparatively free from scarlet fever. There were 18 cases and no deaths.

Diphtheria.—There were 25 cases of this disease, one more than in 1914. The deaths numbered the same, 2.

Measles.—There could hardly be a greater contrast than that between our records in regard to measles this year and last. There were but eight cases, whereas in 1914 we had 279 cases and one death.

Whooping Cough.—There were 33 reported cases of this disease, with two deaths. All cases occurred in the last quarter of the year.

Cerebro-Spinal Meningitis.—For the first time a case of this disease has been reported.

Erysipelas.—Below are the statistics of this disease during the last two years.

Year.	Cases reported.	Deaths.
1914	11	4
1915	5	0

Chickenpox.—There were 94 cases of this disease, with no deaths.

Mumps.—There were reported three cases of mumps, with no deaths.

Typhoid Fever.—Last year we were able to report the least number of cases of this disease we had ever had, 35. It is gratifying to be able to state that we had twelve less cases this year than last. Unfortunately, the disease was of a severe type, so that our death rate is higher. I have been able to trace all cases, with one exception. In no case was our water or milk supply responsible.

Year.	Cases reported.	Deaths.
1914	35	5*
1915	23	7†

*This includes 17 imported cases, with 1 death.
†This includes 9 imported cases, with 3 deaths.
Death rate per 100,000 population, 33.65.

Tuberculosis.

Year.	Cases reported.	Deaths.
1913	12	19
1914	17	11
1915	28	23

W. E. Stanley, Sanitary Inspector.

I beg to submit my Annual Report for the year ending October 31st, 1915.

Nuisances.

The following table shows the number and character of nuisances dealt with by me during the year:

Unsanitary premises	18
Accumulations of manure	7
Offensive privies	20
Garbage nuisances	25
Plumbing defects	7
Other nuisances	25
Total	102

I distributed over 200 copies of the Provincial Board of Health regulations regarding the construction of manure boxes.

Ninety-three written notices were served in connection with nuisances.

In connection with notices served for the abatement of nuisances, four cases were taken into court—two cases for depositing manure in the Neebing River, one for failing to reconstruct a manure box, and the other for having a dirty dwelling house. The fines imposed amounted to twenty-five ($25.00) dollars.

Infectious Diseases.

In connection with infectious diseases 81 visits were made. Thirty-four houses, with a cubic capacity of 179,000 feet, were fumigated. The General Post Office was also fumigated.

Dairies and Cow Barns.

Dairies and cow barns have received constant attention during the year. In several instances improvements have been made and some rebuilding done.

The inspection of milk from the country has received constant supervision at the wholesale depots, the dirt tester having been applied 307 times, with the result that 128 gallons of milk were condemned and destroyed. This has had a marked effect on the cleanliness of the milk from the country. Eleven hundred and three inspections were made during the year.

Police Court proceedings were taken in five cases, with the result shown: Dirty milk, $5.00 and costs; dirty milk, $2.00 and costs; milk low in butter fat, $5.00 and costs; selling milk without a license, $5.00 and costs; selling milk without a license, $5.00 and costs. Two hundred and sixty-eight samples of milk were taken for analysis.

Thirty licenses were issued during the year.

The old difficulty of dealing with the one-cow keeper is still in evidence. It is impossible to keep them under efficient supervision. The only solution is to debar the keeping of dairy cattle within the residential portion of the city, except *bona-fide* licensed dairymen. This would not only prohibit the sale of milk, but would do away with nuisances of various degrees which arise from the keeping of cattle on small lots in built-up portions of the city.

Plumbing Installations.

During the year 31 notices were served for the installation of plumbing.

Two thousand dollars was allowed by the Council for the work, which, it was understood, should be confined chiefly to stores and lodging houses.

Number of notices served	31
Work done by owner	2
In default by the agent	19
Number of inspections	116
Total	168

Ten requests to the Council to proceed with the work were not attended to, owing, I presume, to the financial situation.

Of the $2,000.00 appropriated only $1,206.00 was spent upon the work, making the average cost of each installation about $63.50.

Restaurants and Hotels.

There are 15 licensed restaurants in the city, 10 less than last year. They have been periodically inspected.

The 12 hotels have also been inspected and various sanitary defects remedied. One hundred and twenty-one inspections were made.

Stores, Etc.

All stores are inspected at frequent intervals, and generally speaking are kept in a cleanly state. Bread is weighed in bakehouses and stores regularly, and the weight is fairly constant.

One thousand nine hundred and eight pounds of meat and 17 pounds of butter were condemned and destroyed.

The Board of Health has established an abattoir, the report of which follows later.

The following inspections were made: Butcher stores and abattoir, 1,153; restaurants, 621; bakeries, 439; ice cream and fruit shops, 262; grocery stores, 211; dairies, 1,113; total, 3,799.

Eight prosecutions were instituted for various offences under the Public Health Act.

Report on Public Abattoir.

On August 1st the abattoir was opened and worked by this department. It was necessary to obtain several articles and clean the machinery.

The fees charged for slaughtering are: Cattle, $1.00; calves, 50c.; hogs, 50c., and sheep, 15c. The monthly working expenses will amount to about $55.00, which includes rent, light, power, 'phone and scavenging.

The amount of business done does not justify the department in engaging a first-class slaughterman at a fixed salary. At present the wholesale butchers are allowed to kill for themselves or engage their own slaughterman.

The following are the figures for the three months the abattoir has been in operation:

Month.	Animals slaughtered.	Revenue.
August	123	$63 05
September	117	65 50
October	138	84 65
	378	$213 20

Revenue	$213 20
Expenses	193 60
Balance in hand	$19 60

A. T. Moodie, Assistant Sanitary Inspector.

I beg to submit my report for the six months ending September 30th, 1915.

Nuisances.

In dealing with nuisances the endeavour has been to obtain satisfactory results by educating the people to the necessary requirements and improvements as laid down by the city by-law. Whilst the foreign population have appreciated this method, a number of English-speaking people look upon it as an unwarranted interference. Police Court proceedings were resorted to only when persuasive methods failed.

Periodical inspections were made of premises throughout the city, all sections being covered. Whenever complaint was received or exterior conditions found unsatisfactory, the interiors of houses also were inspected. Generally speaking, houses were found to be in good sanitary condition.

Considerable improvement has been made with regard to manure boxes. The new provincial by-law requires all boxes to be constructed of tongued and grooved lumber, with a flyproof cover and ventilator, the floor of the box being concrete or brick. Complete co-operation was obtained from those owning manure boxes, and all manure boxes now conform to the new regulations.

Much progress has also been made in the matter of dilapidated privies. Efforts were made to see that all privies were fly-proofed and properly ventilated. With the large number of privies used it was found impossible to effectually deal with all cases this season, but by obtaining the co-operation of the cleansing department it was possible to get the worst cases effectually attended to.

Some time was spent by the superintendent of the cleansing department and myself in connection with garbage receptacles. Some improvement was obtained by explaining the benefits derived when a proper garbage receptacle was in use. I would point out that this is a matter which should receive all the attention possible.

The following notices were served in connection with nuisances caused by: Filthy or dilapidated privies, 783; domestic animals, 12; unsanitary manure boxes, 15; offensive garbage receptacles, 4; accumulations of refuse, 20; accumulations of manure, 8; unsanitary premises, 41; unsanitary yards, 10; workmen's privies, 4; other matters, 25; total, 922.

Other notices were served requiring provision of manure boxes, 375; provision of garbage receptacles, 57; removal of old privy buildings, 2; provision of new privies, 36; total, 470.

Letters to the number of fifty, signed by the Police Magistrate, were sent as a final warning, which in most cases made it unnecessary to take further proceedings.

In connection with nuisances it was, however, necessary to take Police Court proceedings in two cases.

Number charged with failing to construct manure box in accordance with the Provincial Regulations, 2.

H. J. Paddington, Cleansing Superintendent.

In accordance with your request I submit herewith a synopsis of our work during the past year:

Garbage Collection.

The question of proper garbage receptacles and that of wrapping garbage in paper needs early attention. Some improvement has been made and the number of covered articles increased by dealing with individual cases as they were reported. Valuable assistance has been given in this respect by the Health Department, but under this method a considerable length of time must elapse before the required conditions are obtained.

There are two methods whereby the necessary results can be obtained, (1) by a systematic educational canvass, and (2) by the distribution of leaflets of personal instruction.

Nightsoil Collection.

It is noticeable that the number of privies in the city does not decrease to any appreciable extent. This is due partly to the occupation of many shacks, this being particularly evident on Island No. 2, where eleven shacks have been occupied, and partly to the insufficient number of sewer connections put in. In 1914 there were 1,623 privies in the city, 613 of these being on sewered streets. This year fifty sewer connections have been made to houses with privies, and thirty houses have been added to the collection, thereby reducing the total number of privies to 1,603. The number of privies on sewered streets, however, has been increased to 643. This appears to be a low rate of progress.

Nuisance Ground.

Small trenches are usually dug in the summer months in order that each trench should not be in use for too long a period. The nightsoil is periodically covered with dry earth. On the occasion of a visit from Dr. George, Provincial District Officer of Health, he strongly recommended that each day's collection should be covered with dry earth. It is the intention to carry out this suggestion in future.

Spring Clean-Up.

The class of refuse removed this year was vastly different to that of last year, only about three per cent. of this year's accumulation consisting of matter directly injurious to health, as against nearly thirty per cent. last year.

Florence K. Fisher, Visiting Health Nurse.

I beg to submit my report for the four and a half months I was on your staff, May 15th to September 30th.

The work done has been along the line of former years. As usual, the coal dock section demanded most of my time. Of the 28 infants who died of gastro-enteritis

during my service, 16, or four-sevenths, resided in the coal dock region—that is that part of the city in ward one lying within the boundaries of William Street, Simpson Street, McDonald Street and the Kam River.

It is worthy of note that many of the homes visited this year were the same as I visited last year. This being the case, I was able to do considerable work among expectant mothers.

The value of the educative work of last year was very noticeable. Education is the root of the whole work.

Below will be found a summary of the work done:

Month.	No. of visits.	New babes visited.	Breast fed.	Mod. milk.	Con. milk.	Patent foods.	Special calls.
May	222	216	203	9	3	4	2
June	408	168	134	8	15	11	84
July	448	180	142	12	3	23	168
Aug	489	90	69	11	.....	10	337
Sept	389	86	71	9	.....	6	261
	1,956	740	619	49	21	54	852

The total number of visits made was 1,956. The cost per visit was 21.04c., made up as follows:

Salary of nurse (4½ months)	$357 50
Auto service	35 00
Street railway tickets	12 50
Printing and stationery	15 90
Sundries	10 65
	$411 55

KATHERINE SPEARING, SCHOOL NURSE.

As requested by you, I take pleasure in handing you herewith my report for the eight and a half months of the school year ending October 31st, 1915.

Month	Inspections.	Exclusions	Home Calls.
January	817	18	56
February	1,762	31	..
March	1,582	21	56
April	924	21	62
May	1,237	17	57
June	1,293	9	38
September	1,044	25	40
October	942	19	66
	9,601	161	375

The exclusions were for the following: Pediculosis, uncleanliness, diseases of the skin, chickenpox, acute tonsilitis, contagious diseases in the home, etc.

GALT.

DR. T. W. VARDON, M.O.H.

As you are aware, one of the most difficult problems we have to contend with is the collection and disposal of nightsoil. If all those who are living on the lines of sewers would make connections therewith, this nuisance would be reduced to a minimum, as the sewer system now extends over nearly all the principal streets of our city. In the interests of the common welfare of our citizens, and having the responsibility placed upon us to guard in every proper way the health of the people, and having already implored, beseeched and coaxed many of them to attend to this important matter, I think you will agree with me in saying that our patience is about exhausted, and that the time has fully arrived for this Board to use all the legal power at its command and compel those who have not made the necessary connections to do so without delay.

Our people should fully understand that it is very difficult to get anyone to do this sort of work and still more difficult to get a place to put the material where it will not create a nuisance. Some say that installing of plumbing fixtures is a financial hardship and they are on that account not in a position to go on with the work; to many this does not apply. Others threaten to increase the rent, which is a poor argument One thing is sure—this nuisance must be abated if we have regard for the welfare and comfort of the people.

Our milk supply has been fairly good; a number of tests have been made of the milk, and in some cases the quantity of butter fats has been low and in some samples dirt has been found. The attention of those in error has been called to this and recent tests show improvement. The vendors who retail the milk are responsible for its purity and cleanliness, and it is up to them to see that the producers from whom they obtain the same use every precaution to keep both the cow stables and utensils in a good sanitary condition.

The city water has been tested a number of times, and in every case found pure and free from contamination.

All of our schools are in a good sanitary condition and are well looked after by those who have them in charge.

The Galt Public School Board is to be congratulated and commended for employing a school nurse whose active duties are to commence the beginning of the incoming year. I am confident that this is a step in the right direction and will be of benefit to the children as well as to the Department of Health.

We have had 14 cases of diphtheria, with 5 deaths. These fatal cases were all young children, who died from diphtheritic croup. In these cases the disease had not been recognized in time for the curative effects of antitoxin to be effective. I have stated before, and again call the attention of our citizens to the fact, that all cases of croup should be treated as diphtheria, and in these cases, as well as cases of sore throat, the family physician should be consulted at once. With the early use of diphtheria antitoxin, few cases will prove fatal. Also those who are exposed to this disease can be made immune with this valuable remedy.

Only one case of typhoid fever reported in a population of 12,000 goes to prove that our city water is pure. The net death rate for our city for the past year is only a little over 10 per 1,000 of population, which is the lowest on record. The birth rate is over 25 per 1,000 of population.

The Swiss Cottage has been open 110 days. Sixteen cases were admitted, with the following diseases: Diphtheria, 11 cases, 2 deaths; cerebro-spinal meningitis, 2 cases, 1 death; scarlet fever and measles, 1 case of each, no deaths, and one case of tuberculosis, removed.

In connection with this cottage, we are pleased to thank the Daughters of the Empire for presenting us with a beautiful refrigerator and the Galt Hydro-Electric, who have installed an electric stove, both of which are very much appreciated.

This cottage should be lathed and plastered on the inside. It requires it badly, and I would recommend the Board to have the matter attended to at their earliest convenience.

I would call the attention of our City Council to the fact that this cottage is not inside the city limits, and would recommend them to take the necessary steps to have the same, together with that portion of our city waterworks property, brought into the city as soon as possible.

We are pleased to thank Dr. McNally, of Guelph, District Officer of Health, for the valuable assistance he has given us from time to time, and I am thankful to you, gentlemen, for your co-operation and assistance during the past year.

HAMILTON.

DR. JAMES ROBERTS, M.O.H.

During 1915 there have been registered 1,365 deaths of whom 24 were non-residents, making an actual total of 1,341 deaths occurring within the municipality. The death rate per thousand of population, excluding premature and still births, was 11.67, as compared with 10.9 for 1914.

The total births, 2,896, represent a birth rate of 28.81 per thousand, compared with 28.92 for 1914.

136 deaths were due to communicable diseases; 127 to diseases of the nervous system; 150 to pathological conditions of the blood and circulatory mechanism, and 164 to the pneumonias and various bronchial affections. Cancer killed 81; accidents were responsible for the deaths of 53 persons. 278 died in early infancy and 41 succumbed as a result of the natural cessation of the vital activities in old age rather than to specific maladies.

Communicable Diseases.

Three thousand six hundred and eighty-four cases of communicable disease were reported as compared with 2,570 for 1914. Of the total cases, 2,015 were measles and 327 whooping cough. The total deaths from this group of diseases numbered less than in the previous year, being 136 as against 154 in 1914—the death rate per thousand of population for the respective years being 1.35 and 1.53.

Diphtheria.

There were 210 cases of diphtheria reported, of which number 20 died. A larger percentage than usual of the diphtheria cases were of the laryngeal type and the mortality was high. Some of these cases are not recognized at a sufficiently early stage to ensure prompt removal to hospital and early administration of antitoxin.

We are confident that the splendid efforts of the Provincial Health Officer will be appreciated fully by the medical profession throughout Ontario and that free antitoxin will be administered when there are at all suspicious symptoms of this disease.

It has been abundantly demonstrated that "Antitoxin early and in large doses" is the only slogan in the handling of diphtheria.

Scarlet Fever.

The reports of scarlet fever numbered one less than in 1914. We had only one death. The honest co-operation of the medical profession in mild cases of this disease will help the Health Department inestimably at the beginning of outbreaks. Scarlet fever is preventable to as great an extent almost as is diphtheria.

Measles and Whooping Cough.

The deaths from measles and whooping cough combined—23 in number—did not total as high as in 1914, although the cases reported exceeded numerically those reported last year by 646. Whooping cough we find exceedingly difficult to control. Parents, often on the advice of the family physician, insist on giving the patient plenty of fresh air, which too often happens to be the air of a moving picture or other well-patronized theatre. Numbers of children thus become exposed to infection, sometimes from ignorance on the part of mothers, sometimes through thoughtlessness, sometimes through indifference.

The hearty co-operation of school teachers, principals, school nurses, etc., with the Department has not been able to overcome the concealment and deception that are practised to avoid reporting of this disease.

During my year of absence from the Department the different officials have discharged their duties in a most satisfactory manner.

KINGSTON.

Dr. A. R. B. Williamson, M.O.H.

In presenting my report for the year 1915, I am pleased to be able to state that very definite progress has been made in some directions from the point of view of public health, and that the number of cases of infectious diseases of various types has decreased, although some of the cases of diphtheria and meningitis have been malignant in character and fatal in effect. Beginning with the month of January we have had several scattered cases of cerebro-spinal meningitis. These appeared about the time that troops in large numbers were being recruited and quartered in camp and barracks. The cases occurring among the troops were looked after by their own medical officers. Those occurring among the urban population were of various types. Each was carefully investigated by spinal puncture and culture of cerebro-spinal fluid. The epidemic cerebro-spinal cases were treated with Flexner's serum and nearly all recovered. A few of the epidemic cases and all those that were found to be due to the influenza bacillus and the pneumococcus died. Although the total number of cases was small the value of Flexner's serum in the epidemic form was proved by the results. In June, the occurrence of three epidemic cases among school children and the finding of some twenty-five carriers led to my advising the School Boards to close up a week before the end of the term. The carriers were isolated and treated and there have been no cases reported since then.

Owing to the continued treatment of drinking water by chlorine there have been very few cases of typhoid fever. Since chlorination of water supplies was first undertaken there have been many improvements in the methods adopted and it may be that our somewhat primitive system is accountable for the many complaints received, and it is possible that the installation of a modern chlorinating plant would overcome most of the objections raised.

One of the much needed sanitary improvements urged in my last report has been adopted by the council. I refer to the incinerator which was installed in September and which has been doing its work so satisfactorily for the past four months. The adoption at the same time by council of a civic system of collection of garbage, ashes, etc., has proven most satisfactory under the supervision of the capable inspector, Mr. Timmerman.

LONDON.

S. Baker, Secretary.

I beg to submit the report of the Board of Health for the year 1915. The Board held seventeen meetings. Mr. C. R. Somerville was elected Chairman.

Sanitary Sewers.—The Board considered and requested the construction of thirteen sewers on sanitary grounds. The general sewer system of the city has been considered. The sewers requested by the Board of Health have been constructed.

Cove Hospital.—The Cove Hospital equipment has been completed and is now in satisfactory condition for use.

Sanitary Inspection.—The sanitary inspection of back yards has been followed out by the usual method. The reports of these men have been satisfactory and Inspector Lutman's report shows that the sanitary conditions here are carefully looked after.

Public Lavatories.—The public lavatories of the G.T.R. and public parks have been reported upon and the former has been closed and the latter are now considerably improved.

Rendering Works.—The condition and license of the Spettigue rendering works received the attention of the Board. The condition is still under consideration by the Medical Officer of Health and the license is, in the meantime, withheld.

The butchers of the city have been notified that they must secure a license to carry on the rendering business on their premises. It is the intention of the Board that these places shall be sanitary.

Port Stanley.—Your Board has taken the question of the sanitary arrangements at Port Stanley up with the London Railway Commission and Sir Adam Beck has promised that the requirements of the Board shall be carried out. This is an important matter for the London visitors to Port Stanley.

Market House.—Your Board finds that the market house is now in an improved sanitary condition.

Water.—London's water has been regularly tested and is reported to be very satisfactory.

Milk.—The milk supply is receiving careful and regular attention. The Veterinary Inspector's report shows that London's supply compares very favorably with that of other large cities. The quality of milk is improving.

Smallpox.—The regulations of the Board and the care of the M. O. H. and his assistants have made it possible for your Board to report that there is no case of smallpox in the city at present.

Medical Officer of Health.—The resignation of Dr. Hutchinson, after many years of service, was accepted, and H. W. Hill, M.D., M.B., D.P.H., Director of the Institute of Public Health appointed. The city now has the advantage of the equipment and officers of the Institute making our health staff now one of the best in the Province.

Reports.—At each meeting of the Board, systematic, definite and full reports on the work of the Board and its officers are presented and considered. The Board is thus put in possession of the facts and the work of the Board is becoming, we feel sure, of greater value to the city.

Vaccination.—A highly successful vaccination of public and school pupils was completed. The Board of Education and the physicians of the city gave your Board every assistance in carrying out this important movement.

Nurse.—One nurse is now in the employ of the Board. Her services have already proven satisfactory, particularly along the line of tubercular cases. She is ably assisted by another nurse employed by the London Health Association.

Private Lanes.—Your Board has under consideration the sanitary conditions of private lanes in the city.

DR. H. W. HILL, M.O.H.

The contagious diseases occurring in London are here recorded in two ways. First, monthly from December 1st, 1914, to December 31st, 1915, for 13 months. Second, for the year December 1st, 1914, to December 1st, 1915. Third, for the year January 1st, 1915, to December 31st, 1915.

The contagious diseases actually occurring in London, as in any other place, may be divided into:

First—Those reported by physicians.

Second—Those not reported by physicians but coming to the attention of the Department (*a*) through its own efforts; (*b*) through the reports of allied bodies, such as school nurses; (*c*) through the reports of householders; (*d*) through reports of deaths, the case not being reported while the patient was alive.

Third—Those not coming to the attention of the Department at all.

Many cases of most of the infectious diseases are not brought to a physician's attention at all, and while it must be admitted that physicians are often careless in reporting cases, especially in reporting them promptly, yet if every physician reported every case which he sees, still a large proportion of all infectious diseases would go unreported, if physicians were the only source of information.

This is especially true of what the public regard as the milder diseases such as measles, German measles, chickenpox, mumps, whooping cough, but it also applies to mild types of the more severe diseases, such as smallpox, scarlet fever, and diphtheria. [Note that later on it is shown that there were twice as many deaths from measles and whooping cough as there were from scarlet fever.]

This is particularly true of cases reported as diphtheria or typhoid fever. Hence the total cases of any one disease, as reported by physicians and others, must be discounted by that number of those cases which proved not to be the disease reported. In some instances correcting the diagnosis merely shifts the disease from one column of the contagious list to another, but in other instances removes it from the list of contagious diseases entirely.

For instance, it will be noted that two-thirds of the cases of diphtheria sent to the contagious wards of Victoria Hospital during October and November proved on cultural examination not to be diphtheria. In the majority of these instances the disease was infectious (tonsilitis, septic sore throat, etc.), although it was not diphtheria. Again in a case reported as measles by a physician, and in a case reported by a householder as probably scarlet fever, the disease turned out to be a vasomotor disturbance of a non-infectious character. On the other hand, in the cases of scarlet fever reported by physicians, there were no cases which proved to be something else, although in one case of scarlet fever, the child had the itch also.

Compared with the number of cases for the year 1915, is the probable average number of cases per year for a population of 58,000 (approximately that of London), in the population under 16 years of age. These figures were obtained from the Contagious Disease Census of the school children of London, covering only diseases for which figures are given.

CASES OF CONTAGIOUS DISEASES AS REPORTED FOR LONDON.

—	Small pox.	Scarlet Fever.	Diphtheria.	Measles.	Whooping Cough.	Typhoid Fever.	Tuberculosis.	Infantile Paralysis.	Cerebro-Spinal Meningitis.	Chicken-pox.	Mumps.
December, 1914	12	3	24	.....	.....	.....	9	.....	.....	.....	.....
January, 1915	34	2	33	.....	.....	.....	15	.....	.....	1	.....
February, 1915	27	.....	13	.....	.....	.....	9	.....	.....	7	.....
March, 1915	21	.....	14	.....	.....	1	6	.....	3	2	1
April, 1915	5	.....	6	.....	.....	.....	5	.....	1	.....	.....
May, 1915	1	5	6	.....	.....	1	7	.....	2	.....	1
June, 1915	1	4	11	.....	.....	.....	8	1	.....	14	1
July, 1915	.....	5	9	.....	.....	.....	17	.....	.....	8	2
August, 1915	.....	2	15	.....	3	5	14	.....	.....	.....	2
September, 1915	.....	7	18	.....	3	4	14	.....	2	3	1
October, 1915	.....	2	12	.....	2	1	15	.....	.....	9	1
November, 1915	.....	9	9	.....	.....	1	10	.....	1	12	8
December, 1915	.....	2	5	1	.....	.....	12	.....	2	9	7
Cases for year Dec. 1, 1914, to Dec. 1. 1915	101	39	170	about 80	8	13	129	1	9	56	17
Deaths for year, Dec. 1, 1914, to Dec. 1, 1915	.....	2	10	3	1	3	42	.....	13	.....	.....
Cases for year 1915.	89	38	151	about 80	8	13	132	1	11	65	24
Deaths for year 1915	.....	2	7	3	1	3	44	.....	16	.....	.....
*Probable average number of cases per year	.....	244	128	934	644	.....	*300	.....	.....	551	679

*The results here given are those of the health census of the school children of London, with the exception of tuberculosis, the figures for which are computed on the basis that for every death in a year there have existed two other open cases and three incipient (i.e., six times the deaths in a year is an estimate of the number of cases that existed), during the year.

This would lead to an estimate of approximately 300 cases (in all stages) existing in London, in the past year. The list of cases at the end of the year (including all cases known to have existed in the year) contain 185 names.

Thus on the assumption that the actual number of cases that existed in the year was 300, London has about 60 per cent. of the tuberculosis cases reported.

OTTAWA.

DR. R. LAW, ACTING M.O.H.

In the absence of Dr. Lomer, M.O.H., who, as a Medical Officer, is doing his bit caring for our boys at the front, it is my duty to present to you the report of the Health Department for the year ending October 31st, 1915.

Attached herewith are the reports of the sub-departments.

The estimated population is	100,163
Total number of births	2,688
Birth rate, per 1,000 population, for 1915	26.83
Birth rate, per 1,000 population, for 1914	24.92
Total deaths, 1915	1,750
Still-births	148
Deaths of non-residents	168
Corrected total deaths	1,434
Death rate, per 1,000 population	17.47
Corrected average death rate for 1915	14.31
Corrected average death rate for 1914	15.26

The foregoing table shows that this year we have had the highest birth rate and are within a narrow margin of the lowest death rate during the past five years. Our population had increased by 11,295 during the first four years of this period, the past year has shown an actual decrease of 1,632 in spite of our improved birth and death rates. This indicates that Ottawa's men have not been unmindful of their duty to the Empire and Our Allies in their hour of stress.

COMMUNICABLE DISEASES REPORTED.

Diseases.	1914.		1915.											
	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	Cases.	Deaths.
Typhoid fever....	16	12	3	6	4	7	2	2	7	12	19	22	112	28
Tuberculosis.....	15	7	11	16	21	17	11	10	17	11	12	19	174	159
Small-pox.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diphtheria	89	78	53	86	46	62	59	40	23	20	39	55	650	53
Whooping cough..	0	0	0	0	3	11	1	0	6	1	6	0	28	2
Chicken-pox.....	8	15	11	16	2	10	3	3	1	0	2	2	73	0
German Measles.	0	0	1	1	2	2	0	3	4	0	0	0	13	0
Measles.....	1	0	0	1	9	9	5	2	1	1	0	0	29	2
Scarlet fever	6	9	3	2	14	8	9	4	5	4	7	2	73	3
Mumps.....	0	0	10	16	24	21	17	7	1	0	0	0	96	0
Erysipelas	0	2	0	2	1	2	2	1	0	0	0	0	10	2
Cerebro-spinal Meningitis	0	0	1	0	1	0	0	0	0	0	0	0	2	0

The total deaths from the acute communicable diseases are but 86, as compared with 115 last year.

SMALLPOX.

Of smallpox we have been fortunately entirely free.

SCARLET FEVER.

As regards scarlet fever there were only three deaths and 73 cases, as compared with 29 deaths and 334 cases in 1914.

DIPHTHERIA.

During 1914, Diphtheria had caused 60 deaths, four of which were from outside the city, this year diphtheria has caused 53 deaths, seven of which were from outside the city, giving for the city 46 deaths as compared with 56 for the preceding year; a decline of 10.

The diphtheria situation has caused your Board its chief concern this year, and the fact that a condition that for three years past had become steadily worse, has this year shown an improvement, and as presumably the fruits of this year's work will be a very decided improvement next year, your efforts and the slightly increased expense entailed thereby have been well warranted.

I wish to express my appreciation of the services rendered by Dr. Shirreff, in connection with this work and also to draw your attention to the fact that in spite of the payment to Dr. Shirreff our actual salary outlay is less this year than last, and furthermore, that the financial statement presented by the Secretary will show the Board of Health this year contributes generously to the anticipated civic surplus. Speaking as a ratepayer when it is a matter of saving lives or dollars, I think but few of the citizens in Ottawa will vote for the dollar.

Year.	Cases.	Deaths.
1915	650	55
1914	614	60
1913	378	40
1912	401	30
Totals	2,043	185

Typhoid Fever.

During the year 112 cases of typhoid fever were reported. Of these, 65 were from outside the city with 14 deaths, and 47 cases were from the city with 12 deaths.

It has in no time of the year been prevalent in anything approaching epidemic form. A tribute to the watchfulness and care bestowed on the treatment of our water supply by Mr. Haycock, waterworks engineer, and Mr. Race, city bacteriologist, who have co-operated throughout to obtain this result, which has this year been obtained with the use of very much less hypochlorite than formerly.

Tuberculosis.

During the year 159 deaths occurred from tuberculosis as compared with 137 last year, a regretable feature.

It is encouraging, however, to note that the cases are now being better reported than formerly. This year for the first time, the reported cases have exceeded the deaths, 174 cases having been reported this year as compared with 107 last year.

The thanks of the city are due to the many public-spirited men and women who have given so freely of their time and means for this war against the greatest of communicable and preventable diseases.

It is regrettable that two very desirable reforms, whose realization we had hoped for, this year have had to be postponed.

First, the abattoir, owing to discovery that the necessary authority cannot be obtained to require inspection of cattle. Therein efforts should be made during the coming year to obtain the legislation necessary.

The other was the milk regulation empowering us to take advantage of the Dominion Government's offer to test all herds and then allow the dairymen the option of freeing their herds from tuberculosis with the aid of compensation from the Government, or should they not desire to avail themselves of this offer, then requiring that the milk be pasteurized. A number of the dairymen, feeling that the proffered compensation was utterly inadequate successfully opposed the regulation.

However, the matter is being tried out elsewhere and further experience may enable the Government to arrange for the successful carrying out of the measure in such a way as may benefit both consumer and producer without hardship to the latter.

Infant Mortality.

The report of Miss Davidson shows that the work of the nurses is becoming increasingly popular with the result that our infantile mortality continues to decline.

Infant Mortality Table.

Total deaths under one year for			1915	507
"	"	"	1914	534
"	"	"	1913	545

The thanks of our Board are due to Drs. Tilley, Beroard and Brunet, who have given their services freely at the clinics held regularly at the milk stations and thereby contributed most materially to this life-saving work.

The temporary detailing of two nurses at the Misericordia Hospital has also led to very great improvements there. The Sisters have shown their appreciation of the importance of this help by continuing to employ one of the nurses on this work.

Isolation Hospital.

Dr. Hardman and the staff of the Isolation Hospital are to be congratulated on a very successful year's work, report of which follows:

Number of admissions during year	681
Aggregate attendance	11,603
Average number of patients	31.7
Maximum number of patients, any one day, May 18, 1915	58
Minimum number of patients, any one day, July 26, 1915	15
Percentage death rate of Hospital	6.2

Contagious diseases admitted to Hospital during the year:

Disease.	Admitted.	Discharged.	Deaths.	Death Percent.
Diphtheria	597	546	39	6.5
Scarlet fever	62	60	2	3.2
Measles	10	10	....	....
Chickenpox	4	4	....	....
Mumps	2	2	....	....
Erysipelas	3	2	1	....

Scarlet fever has shown an unusual decrease in the past year, the disease also being of a very mild type; consequently, we have had very little trouble as to complications, only two cases of albuminuria developing.

Mixed Infection.

We have been very fortunate the past year as to this trouble, not a single case having developed in the wards, though at times we have admitted to the annex various complicated cases.

Bacteriology.

Swabs examined for Klebs-Loeffler bacillus	6,938
Negative swabs	5,458
Positive swabs	1,480

There has been an increase of over 2,000 swabs examined at the Hospital this year, examination being far in excess over previous years. The routine investigation of schools accounts for many of this number, some are hospital discharge, and a number from the general practitioners who find our hours convenient.

Contagious Diseases.

Until we have the co-operation of the public directed along lines of preventing contagious diseases, efforts to cope with such will not be very successful, for fully twenty-five percent. of all deaths are preventable.

Necessity of Early Treatment in Diphtheria.

Of the thirty-nine deaths occurring at the Hospital, twenty-eight had been ill at home for periods ranging from four days to fourteen, treatment at home with various remedies being responsible. Of the thirty-nine deaths occurring, eight were moribund on admission, even though all these cases were given large doses of anti-toxin. Below I submit a form showing the results of late treatment in diphtheria, as taken from our history admission sheets:

Days' Illness at Home, with Percentage Death Rate.

Days	1	2	3	4	5	6	7	7–14
Death rate	0	1.6%	3%	7%	12%	23%	33%	33–50–100%

Reduced Death Rate.

We have reduced the death rate for diphtheria at the Hospital from nine per cent. last year to six per cent. This was due to the increased doses of anti-toxin, and the results are gratifying. The average dose given is twenty-three thousand units, and our death rate includes all cases, even though some were less than forty-eight hour cases.

Laryngeal Diphtheria.

In laryngeal diphtheria, the death rate has shown an extraordinary decrease from thirty-six per cent. last year to twenty-two per cent. this year. We have intubated thirty-five patients, and had eight deaths, one dying within a stay of five minutes, another within a twenty-four-hour period.

The longest period of child wearing tube, four months; with recovery.

Civic Laboratory.

The report of Mr. Race, city bacteriologist, on the work done in the laboratory is herewith appended.

Month.	Water.		Milk.		Hypochlorite.	Foods and Drugs.	Diphtheria Swabs	Sputum.	Widals	Miscellaneous	Totals
	Chemical.	Bacteriological.	Chemical.	Bacteriological.							
1914											
November	8	266	208	213	125	4	6	4	6	1	841
December.	11	266	209	212	125	.....	31	2	4	43	903
1915											
January ..	9	228	176	180	120	4	35	8	8	12	780
February.	8	214	183	238	120	25	115	11	9	15	928
March....	10	255	236	202	135	4	141	20	1	17	1,021
April.....	9	207	223	254	120	3	81	21	2	28	948
May.....	10	229	182	182	125	4	228	17	3	130	1,110
June	10	231	207	216	125	4	374	18	6	179	1,370
July.....	8	236	221	206	130	18	194	16	1	93	1,123
August...	9	248	207	194	125	3	87	11	14	80	978
September	11	238	191	192	125	.....	422	12	18	100	1,309
October...	11	235	193	193	125	2	553	11	11	62	1,397
Total for year....	114	2,854	2,436	2,482	1,500	71	2,267	151	83	760	12,718

PETERBOROUGH.

Dr. C. Hewitt Amys, M.O.H.

I beg leave to report the following in respect to the health of the City of Peterborough.

There were 295 deaths and 487 births during the year. With reference to the deaths it is interesting to note that out of the 295 for the year, no less than 92, or 31 per cent. had passed the allotted span of three score years and ten; 15 per cent. were 80 or over, while 43 per cent. reached 60 years; 20 per cent. of the total number of dead did not reach the age of one year, yet not one death was due to any one of the so-called contagious diseases of childhood. Of these deaths there were 22 due to tuberculosis in its many and varied forms. I am sorry to have to report that the physicians and laity have failed to live up to one of the requirements of the Health Act, that is, to report all cases of tuberculosis. There has not been one case reported during the year except those that have died of it.

There were 23 cases of typhoid fever, with four deaths. Nine of these came from the same source, a well close to the shores of the creek. That portion of the city lying along and in the immediate proximity of the creek is not a safe place for a well, as the formation of the ground is bad.

There were eight cases of scarlet fever, no deaths, and not more than two cases occurring in one month, so you see we kept this dread disease well within bounds.

Diphtheria comes next with 23 cases and no deaths. This disease, in a city the size of Peterborough and with the possible carrier always at school and elsewhere, requires some effort to control, but thanks to the assistance of the school nurse, sanitary inspector, and with a liberal use of antitoxin we are almost free of it at present.

I wish to suggest that the School Boards of the city and suburban schools get together and make arrangements so that a school nurse is engaged to make visits to those schools not included in the present arrangements. If we leave the collegiate institute or any of the schools not visited, we weaken the whole principle and the working out of the same.

Measles.—Fourteen cases during the year, with no deaths.

This is one of those diseases that is very difficult to control, because the people do not know they are required to report them, even if a physician is not called in. They also look upon a placard outside as a greater affliction than the disease within.

They don't realize that that placard may be a warning to some innocent child or person to keep out, and, if that card was not on the door, the inhabitants of that house might be legally and morally responsible for some little one's death.

Mumps.—None reported during the year, and no deaths.

Smallpox.—None reported, no deaths.

Chickenpox.—None reported, no deaths.

Whooping Cough.—One case, no deaths.

Epidemic Cerebro-spinal Meningitis.—No cases, no deaths.

During the summer we were very much alarmed over this dread disease, but although it was at our very doors, there was not one authentic case ever developed within our boundaries.

I must congratulate the Board on its decision to do away with all closets within a stated area comprising the centre of the city, and also to do away with all the deadly pit closets within our city.

I trust that the Council for 1916 will immediately appoint a building inspector and that one of his duties will be to see that no building permits be granted unless the plans provide for a room for a closet.

I also suggest that the new Council court annexation of the suburb lying to the south of us. Our sewers and water mains permeate a large portion of this district, and the inhabitants, by coming in and connecting up, will be helping us to build up a greater, healthier, and cleaner city.

C. A. G. Spence, Sanitary Inspector.

In presenting my fourth annual report for your consideration, it is gratifying to state that distinct progress continues to be made in the administration of the public health in the City of Peterborough, and that although much remains to be done before my ambition of claiming for Peterborough a place second to none in the Dominion from a sanitary viewpoint, is realized, yet its consummation does not appear quite so Utopian as it did nearly four years ago, when I declared that such was my goal.

As my work is naturally of a routine character, an annual report must, of necessity, be somewhat of a repetition, but the following statistics relating to the work accomplished during the past year will, I hope, not be lacking in interest:

Total number of calls and inspections, 3,350, detailed as follows:

Inspections *re* butcher shops	50
" Bakeshops	11
" Cold Storage	1
" Complaints	174
" Dirty conditions	150
" Dairy Farms	78
" Food Supplies	475
" Fruit	260
" Fish	190
" Garbage	60
" Hotels	25
" Hospitals	2
" Houses placarded	22
" Houses disinfected	18
" Ice Cutting	5
" Ice Houses	1
" Incinerator	214
" Laundries	10
" Livery Stables	16
" Licenses	22
" Market	48
" Public Buildings	21
" Quarantine	47
" Restaurants	44
" Slaughterhouses	37
" Schools	6
" Theatres	4
" Weeds	40
" Water supplies	54
Samples of milk tested	204
Samples of water tested	84
Nuisance notices issued	150
Prosecutions	9
Amount of fines	$69.00

Milk Supply.

Great care has been taken to ensure to the public a pure milk supply. Two sources of supply have been cut off during the year and two licenses of milk vendors suspended for a time, owing to conditions not being satisfactory. 204 samples of milk have been tested by me, showing an average percentage of butter fat of 3.65, which is slightly higher than last year. The legal standard is 3 per cent. fat so that the above figures show that the milk the citizens are getting is of very good quality. The same may be said of the cleanliness. The instrument for showing dirt and sediment in milk has been used frequently, and seldom has there been cause to complain of dirty milk. The lactometer which the Board of Health purchased for me this summer has proved invaluable and was the means of discovering one instance where water had been added to the milk, which resulted in a fine of $20.00 upon the offender.

Of the 43 vendors whose milk has been periodically tested, 18 show an average of butter fat between 3 and 3.5 per cent., 16 have an average between 3.5 and 4 per cent., and 9 have an average of over 4 per cent.

There are one or two amendments to the milk by-law I should like to suggest at a later date.

Improvements Effected.

A marked improvement is to be seen in the condition of the yards in the business section, also in the protection from dust and flies of food stuffs, notably fruit and fish; most of the stores being now equipped with glass covered cases to contain the latter. I did not see this in any of the cities I visited this fall with the object of noting sanitary conditions, and the storekeepers are to be commended for their action in this respect.

Another improvement worthy of notice is the cleaning up and sewering of Lafayette and Jackson Avenues, and other unsanitary terraces where sewer connection has been made. This, with the extended garbage collection area, and the by-law to abolish pit closets, and to do the cleaning out by city workmen, will make a great improvement in the sanitary condition of the city next year.

Recommendations.

I should like you to recommend to the Board of Health some measures to govern the keeping of poultry and horses, which at present are the source of many complaints to this department. I should like also to see hotel lavatories equipped with individual towels, and restaurants should be compelled to have wash basins for the use of their customers. A few refuse receptacles placed on the main streets would also be a help in preserving the cleanliness of the sidewalks.

In conclusion, I should like to express my appreciation of the support and encouragement I have received from the Board of Health and the City Council, in measures I have brought before them affecting the public health, and also to the press for the assistance they have rendered in the work.

PORT ARTHUR.

Dr. C. N. Laurie, M.O.H.

The City has been comparatively free from contagious diseases of any serious type. In November and December, 1914, and January and February, 1915, we had a number of cases of scarlatina which, at that time, was general throughout the Dominion. Since then the disease has come under control. The last case being reported in August.

There were three cases of smallpox. Two cases being reported in January, and a case was taken off a U. S. boat in May. They were of a mild type and made good recoveries.

The City has been almost free of that dread disease, typhoid, which has always made its appearance in our midst in the summer. This year, we have only had three cases reported from the City—one case being in November, 1914, one in July and one in September. This is a record which we hope may yet be improved.

There have been six cases of tuberculosis reported, with seventeen deaths. Some of these deaths are cases which had been reported in past years, some are cases which had come into the hospitals from the surrounding country at the last moment but were not reported. One thing is very evident that something must be done to take care of the constantly increasing number of tubercular patients in our midst. At present we have no place in which to treat them excepting the general hospitals or

by sending them to Gravenhurst. Unfortunately it is hard to have patients admitted at Gravenhurst as it is nearly always overcrowded, and the general hospitals are not the best places in which to treat this class of patients. It is time that some steps were taken by the Government and District to provide a hospital, up here, to look after tubercular patients for this District as far west as the Manitoba boundary. I would recommend that your Board should approach the Boards of Fort William, Kenora, Fort Frances and Rainy River, to get some joint action in this matter. I received a number of excellent pamphlets from the Provincial Board of Health on the care and treatment of tuberculosis. We distribute these to families who are suffering from the disease and are satisfied that they will do much good in giving them a better and more intelligent idea as to the care needed to prevent the spread of infection.

CONTAGIOUS DISEASES REPORTED FROM THE CITY FOR THE YEAR.

—	1914.		1915.										
	November	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	Cases.
Scarlet Fever	25	9	12	9	2	1	1	....	2	1	....	....	62
Measles	....	....	....	....	....	3	1	....	....	1	....	1	6
Typhoid	....	1	....	....	....	....	....	....	....	1	....	1	3
Whooping Cough	....	6	....	....	....	....	....	....	....	....	....	....	6
Tuberculosis	....	....	....	....	....	1	....	....	1	3	1	....	6
Diphtheria	....	1	....	....	....	....	....	1	....	....	....	1	3
Small-pox	....	....	....	2	....	....	....	1	....	....	....	....	3
Chicken-pox	....	1	3	6	2	2	....	1	....	4	2	....	21

BIRTHS FOR THE YEAR.

Males	318
Females	279
Total	597

NUMBER OF DEATHS IN THE CITY DURING THE YEAR.

Those under one year of age being	77
Those over one and under two	4
Those over two and under five	8
Those over five and under ten	3
Those over ten and under twenty	6
Those over twenty and under thirty	27
Those over thirty and under forty	14
Those over forty and under fifty	10
Those over fifty and under sixty	15
Those over sixty	29
Total	193

SOME OF THE CAUSES OF DEATH.

Typhoid (Dec. 7, 1915)	1
Violent or Accidental	14
Tuberculosis	17
Cancer	13
Pneumonia	27

Causes of Death Under Two Years of Age.

Stillborn	25
Premature Birth	20
Intestinal or Malnutrition	15
Broncho Pneumonia	12
Acute Nephritis	3
Convulsions	3
Tubercular Meningitis	3
Laryngitis	1
Burned	1
Total	81

You will notice that out of eighty-one deaths among children under two years of age, forty-five were stillborn or died within a few days of birth, which is altogether too large a number, being over fifty per cent.

Number of Patients Admitted to the Isolation Hospital.

November, 1914	11
December, 1914	6
January, 1915	14
February, 1915	4
March, 1915	5
April, 1915	1
May, 1915	2
June, 1915	0
July, 1915	4
August, 1915	2
September, 1915	0
October, 1915	0
Total	49

I have much pleasure in commending the good work done by the Matron, Mrs. Flannagan, who has given the greatest satisfaction in her care of the patients, also in the excellent condition in which she keeps the hospital.

School Inspection.

Number of Pupils:—	
Collegiate Institute	178
Separate Schools	450
Public Schools	2,381
Total	3,009

Miss Jones, the School Nurse, gives all her time to this work. She visits the schools, examines all children sent to her by the teachers, receives the names of all children who are absent without the cause being known, calls at their homes to find if the children are kept home through sickness. If she is in doubt in any case she reports it to me so I can call and make an inspection. All school children suffering from eye, ear, nose or throat diseases she sends to my office for examination, and if necessary I pass them on to Drs. McCullough and Hunt for special treatment, the Council having made arrangement with these Specialists to treat all school children at special rates. During the past year they operated on fourteen; I gave the anaesthetic, the hospitals giving the operating rooms free of charge.

Examinations made in schools by Nurse	4,336
Number of house calls	2,440
Number of pupils sent to M.O.H.	54
Number of pupils sent home for uncleanliness	57
Number of pupils sent home suffering from infectious disease	8
Number of pupils sent home on account of infectious disease in the family	4
Number of pupils sent home on account of sore throats, colds, or skin disease	9
Number of pupils sent home for Whooping Cough	4
Number of pupils sent home for Chickenpox	14

General Hospitals.

During the year the hospital accommodation of our city has been very largely increased by the opening of a new wing in St. Joseph's Hospital. This building, which has been furnished with the most modern and up-to-date operating rooms, baths, electrical room for treatments, wards, and other conveniences, making it one of the best equipped hospitals in Canada, has accommodation for 197 patients. The R. M. & G. Hospital also has accommodation for 60 patients. This hospital is doing good work. It has an up-to-date operating room.

On account of the hard times I have had an unusually large number of charity patients to attend, having treated in my office, 326, and made house visits on 398. I attended eight cases of confinement, I examined in the gaol for the City five insane persons.

I had to issue summons against five parties for infringement of the Health Act. Three of the parties were fined, one allowed to go on suspended sentence on pleading guilty. The fifth we were unable to serve as he is absent from the City.

I addressed eleven mother's meetings, on the care of children and the prevention of contagious diseases; I am pleased to say that a large number of mothers attended and showed great interest in the meetings, also in some pamphlets on these subjects from the Provincial Board which I distributed. I purpose continuing the meetings after the holidays, so as to educate and instruct the mothers in this most important subject.

In conjunction with the Sanitary Inspector, I have visited and inspected boarding houses, hotels, the Sailors' Institute, the bunk houses, restaurants, butcher shops, fruit stores, bake shops, theatres, livery stables, yards, lanes, dairies, the police station, the market, and laundries. I also visited and inspected weekly the camp for the 52nd Battalion at Current River.

With the Plumbing and Sanitary Inspectors I investigated a number of complaints *re* unsanitary premises. I am pleased to say that in all these cases we were able to have improvements made without much trouble. On account of the vigorous and energetic work done in past years in having proper water and sewer connections made, we have had very few complaints about offensive outhouses.

I had sixty notices served on parties having horse and cow stables on their premises, drawing their attention to the style of manure boxes required by the Provincial Board. We did not have a very hearty response to the notices. In fact, we received a good deal of abuse from persons who objected to the expense attached. I have insisted though on the improvements being made, and the Sanitary Inspector has given it a lot of attention, so gradually the parties are making the necessary improvements, next spring I am going to insist that all others served with notices comply or I shall have to take the matter before the magistrate.

We have had three visits during the year from Dr. George, of North Bay, who is acting as District Officer of Health, during Dr. Wodehouse's absence. Dr. George expressed himself as being much pleased with the generally clean appearance of our streets, yards, lanes. I also am much pleased and wish to give the greatest credit to our Sanitary Inspector for his untiring watchfulness, also the Scavenging Department for the good work they have done. Commencing May 1st, they had a clean up week, of which the daily papers were good enough to make special notice. During the week boys and girls were given 10c. per barrel for tins, etc., gathered ready for loading, 690 barrels were gathered and paid for at a cost of $69.00.

During the year the teams collected 3,197 private loads of garbage, these loads being paid for by private parties and earning altogether $801.55. They also collected 2,909 loads for the city, making a total of 6,106 loads. The total cost of the Department being $9,179.18, with credit of $801.55.

Dairies.

I have visited most of the dairies supplying milk to the City, some in the State River District being too far away, but they are inspected by the Fort William Department, I am pleased to state that without exception the dairies are clean, well ventilated, the cattle are well looked after, also the utensils used are kept clean. A great deal of credit for this must be given to our Sanitary Inspector who makes regular visits on all these dairies. He also collects samples of milk from the wagons on the streets, bringing them to my office for examination. Taken generally these samples have been up to the standard. In a few cases we had to give some dealers notice to be more careful. Any dealer continuing to offend being warned that his license would be cancelled.

I have personally attended to the fumigating of all houses where infectious disease has been reported, thus I know that they have been properly cleaned, which has been a very important step in checking the spread of disease.

We have had ten meetings of the Board during the year. On account of his absence from the city, Mr. Seaman has only been present at one meeting.

Mayor Mooney attended	5	meetings.
Mr. Emmerson	10	"
Dr. G. Eakins	10	"
Dr. Laurie	10	"

On account of the opening of our new pumping station, and new water supply for the City last year, we have had no trouble nor cause for anxiety in regard to pure water this year, nor do I expect that we shall have for many years to come. This is a matter on which our citizens may congratulate themselves as there is nothing more important for any community than a pure and unlimited water supply.

BOARD OF HEALTH.

Printing	$46 35
Street car tickets for M.O.H. Sanitary Inspector and School Nurse	51 50
Groceries for families in quarantine	68 10
Fumigators	19 85
Drug supplies (including Isolation Hospital)	359 90
Ambulance	27 20
Expense for horse	27 16
Expenses for M.O.H. to Annual Meeting	75 00
Office supplies	13 46
Painting Ambulance	96 94
Telephones	54 00
Salaries, M.O.H., Sanitary Inspector, School Nurse and Stenographer	4,544 50
Total	$5,383 86
Total expenditure	10,157 23

I have the honour to be, Sir

Your obedient servant,

C. N. LAURIE,
Medical Officer of Health.

ST. CATHARINES.

DR. F. KING, M.O.H.

Generally speaking the health of the city has been slightly above the standard of previous years.

Of communicable diseases there were reported the following:—

Scarlet Fever	40
Diphtheria	9
Typhoid Fever	9
Measles	18
Mumps	6
Chickenpox	1

While this total is slightly in excess of the cases reported last year, it is considerably below the average.

Of these one death was recorded.

VITAL STATISTICS.

Of the total mortality, 285 from all causes, Pneumonia still keeps the first rank.

There were 43 still births and 39 deaths of children under one year of age, many of these being within the first week:

From one year to five	9
From five years to ten	4

Thus it will be seen that apart from the still and premature births the infantile mortality was low, as compared with other cities of like population.

Sanitation.

During the past year a large amount of sanitary work has been done.

Eleven thousand feet of new sewers, with 230 sewer connections, were constructed. This with the six miles of sewers laid down last year places the city in a very satisfactory condition.

Upwards of 1,900 inspections were made by the Sanitary Inspector together with 247 inspections made by myself as M.O.H.

There were 69 houses placarded and 80 houses fumigated.

The garbage collection has been carried on with little friction. The disposal of garbage, however, is still an unsettled question and should receive the earnest consideration of the Board and City Council in the near future.

One of the chief causes of complaints has been the unsanitary, unsightly and offensive stables and manure heaps. This source of danger will require more drastic handling on the part of the Board.

It is a matter for congratulation that the Chief Officer of Health for the Province was impressed, on the occasion of his recent visit to this city, with its general cleanliness throughout. I may add, however, that while he did not see all the low spots, the sentiment he expressed was generally correct.

The Water.

During the year 60 samples of water have been collected and forwarded to the Provincial Laboratories for examination. For the past three months these examinations have shown the presence of bacteria of intestinal origin in all samples. It is to be hoped that the Pipe Line contemplated from Lake Erie will not be unduly delayed.

The Milk.

This important food supply has received increased attention. For the first time in some years a systematic inspection was made of all dairy farms producing milk for sale in this city. The standard of cleanliness, of stables, cattle, utensils, etc., demanded was raised with the result that some producers were cut off, and the license of others withheld until up-to-date conditions were presented.

Examinations for butter fat, temperature and sediment were regularly made with the further result that the quality and cleanliness of the milk, while not yet perfect and varying from day to day, is of a fairly high standard and in advance of previous years.

The time, however, has arrived to dispense with the unsanitary milk can system and adopt the bottle system for house to house delivery.

Isolation Hospital.

We are still without a suitable and properly equipped house for contagious diseases.

It would appear to be one of the mysteries of Providence that the patriotic and humane sentiment of the people of this city will cause the donation of nearly $200,000 for the amelioration of suffering from the war and yet leave it difficult to get sufficient funds to equip so necessary an institution as an up-to-date Isolation Hospital; this remark may apply in a more or less equal degree to the G. & M. and Consumptive extended.

Recommendations.

In conclusion I beg to recommend, That the area for garbage collection be greatly extended.

That out-door closets be prohibited in all sections provided with sewers.

That where such closets are permitted that the box system be established particularly on low grounds like the Facer Street district.

That steps be taken to provide a suitable Isolation Hospital with trained nursing.

That the question of the erection of an incinerator for disposal of all garbage be kept before the city authorities.

That the question of meat inspection and plumbing inspection be earnestly considered.

SAULT STE. MARIE.

DR. A. S. McCAIG, M.O.H.

I have the honor to submit my report of the sanitary condition of the City for 1915.

The people of the City may congratulate themselves upon the good health which the City has enjoyed during the past twelve months. Except for the prevalence of whooping cough during the past two months there has been no serious amount of sickness during the whole year.

INFECTIOUS DISEASES.

1. Typhoid Fever.—There were twenty cases of this disease, nine from the City and eleven from outside. There were two deaths. Last year there were 123 cases in all, with 14 deaths.

Our water supply suffered the same contamination as in former years and the fact that there were only nine cases of typhoid fever from residents of the City indicates that the chlorination of the water has been carefully carried out and is a pretty safe means of sterilization when properly managed.

2. Tuberculosis.—There were 17 deaths from all forms of this disease. It still heads the death column. Educational work in regard to the prevention of tuberculosis and other diseases has been carried on by (*a*) public lectures, (*b*) public health exhibit, (*c*) distribution of literature.

Lectures upon various health topics were delivered by the doctors of the City during the week of the Public Health Exhibit and the distribution of literature has been carried out through the schools and in other ways.

3. Scarlet Fever.—Last year we had 36 cases of this disease, this year only one, a legacy from last year.

4. Diphtheria.—During the year there were two cases of diphtheria, one from the City and the other from Sudbury. In 1914 there were 9 cases.

5. Whooping Cough.—This has been prevalent in the City during the past two months and there have been also a few cases of mumps.

DAIRIES AND MILK SUPPLY.

The dairies were inspected during the year by the Sanitary Inspector and a Committee of the Board of Health. Improvements are made every year in the dairies supplying milk to the City. New barns are being built and old ones rebuilt to conform to the requirements of the Board of Health.

As you know, milk is the most favorable agency for the spread of disease. Epidemics of typhoid fever, diphtheria, scarlet fever and septic sore throat have been frequently traced to contaminated milk.

Tuberculosis is conveyed by milk from cattle to man. Many dairy herds have some animals with tuberculosis and one tuberculous cow in a herd is sufficient to contaminate the product from the whole herd.

Children contract bovine tuberculosis most readily and the infection shows itself by tuberculosis of the bones, glands and meninges.

Pasteurization of all milk is the only safeguard against the conveyance of disease by this cheap and wholesome article of diet.

BUTCHER SHOPS AND SLAUGHTER HOUSES.

These were frequently inspected during the year. The butcher shops were kept clean and a good quality of meat was sold. The question of establishing an abattoir will have to be taken up soon. It would be greatly in the interests of the public health if an abattoir were built here so that animals could be slaughtered under inspection and so much handling of the meat after being slaughtered avoided.

BAKERIES, HOTELS AND RESTAURANTS.

These were regularly inspected by the Sanitary Inspector. All were required to make their premises fly proof. In several instances in the west end of the City it was necessary to correct overcrowding in some of the boarding-houses.

The work of the Sanitary Committee in the collection of garbage was well done and the duties of the Sanitary Inspector were diligently and efficiently performed.

The Board of Health was an active organization during the year, and with Mr. S. W. Fawcett as Chairman, it took an active interest in all matters pertaining to the welfare of the public health.

STRATFORD.

DR. J. A. ROBERTSON, M.O.H.

I have the honor of again submitting to you the Annual Report of the Health Department for the year ending 1915. On the whole the health of the city was very good.

VITAL STATISTICS.

There were registered in the city 375 births, 141 marriages and 190 deaths. Of the number of deaths, 58 died between 1 and 10 years, 12 between 10 and 20 years, 6 between 20 and 30 years, 11 between 30 and 40 years, 17 between 40 and 50, and the balance over 50 years. Eleven are registered as dying of old age.

Taking the estimated population, as per the assessor's report, the marriage rate is given as 8.29, the birth rate as 22.05, and the death rate as 11.17.

CONTAGIOUS DISEASES.

We have had during the year 67 cases of contagious diseases reported, as follows: Tuberculosis, 10 cases, with 10 deaths; diphtheria, 9 cases and 1 death; scarlet fever, 3 cases, no deaths; spinal meningitis, 1 death; mumps, 10 cases, no deaths; smallpox, 22 cases, no deaths; typhoid fever, 12 cases, 2 deaths.

SEWERAGE SYSTEM.

It having become known that certain improvements should be made upon our present system for the protection of health of the citizens, a by-law for $72,000 was submitted and passed. Tenders were submitted and agreed upon, tiles are all completed and considerable of such on the ground. An output of $32,000 has already been spent. When completed it will be a great boon to the citizens, particularly in the eastern portion of the city, as their cellars were invariably flooded after rains.

SEWAGE DISPOSAL.

In connection with this our city engineer, Mr. A. B. Manson deserves credit for his drawing of plans *re* improvement in sewage disposal. They were approved by the local and Provincial Boards of Health. They include screening and detritus chambers and two-storey sedimentation tanks. On August 2, 1915, these were completed at an expenditure of $30,000, and the plant put into operation. A marked improvement in the effluent was at once noticed. Further construction included the placing of an auxiliary gasoline-driven centrifugal pump of 850 imperial gallons per minute capacity; this to aid the present equipment in storm periods.

The third filter bed, necessitating the placing of 1,566 tons of crushed stone, was also completed.

The covering of the Romeo and Erie creeks and the creek from the rear of the Allis-Chalmers factory on West Gore street has not only increased the value of the properties in their vicinity and added to the beauty of the city, but is a boon to the citizens and an improvement to the preservation of health. All three of these creeks join and follow the one course from the rear of the Loghrin tannery on Erie street and empty into the lower Avon river.

SLAUGHTER-HOUSES.

A copy of the regulations in respect to slaughter-houses was sent to each individual butcher early in the spring, informing him that the Provincial Board was determined that its regulations in this matter should be strictly carried out. In company with the District Medical Officer, the Board visited the different slaughter-houses and found them, except one, far from being up to required regulations. They were given further notice to comply, but so far very little has been done. It now rests upon the Board to deal with the matter.

OUR WATER SUPPLY.

In October we collected samples of the city's water supply and had same sent to the laboratory of the Provincial Board of Health for bacterial analysis. The result showed the presence of bacteria of intestinal origin, indicating that the water was not free from contamination. The commissioners immediately set to work and had a chlorine plant installed, and as a result the report of subsequent analysis, in November, showed the water was almost entirely free from bacteria. The danger of disease therefrom may be considered *nil*. The source from which the contamination came is being rigidly looked for.

Garbage and Incinerator.

These seem to be giving general satisfaction. From November 1st, 1914, to November 1st, 1915, the amount of garbage consumed at the incinerator was 6,522 loads or 3,587 tons. The rated capacity of the plant is 15 tons per diem, but its actual capacity exceeds this considerably. No complaints are being made as to its being a nuisance in its neighborhood.

Isolation Hospital.

There were admitted during the year 14 cases: Meningitis, 1; diphtheria, 1; smallpox, 12. There were no deaths. The total expenses for the care of these patients was $398.62. Of this amount $96.30 was paid by the patients and $137.15 paid by the city, leaving a balance of $165.17.

WINDSOR.

Dr. G. R. Cruickshank, M.O.H.

Your Executive Officer begs to make the Annual Report for the period from November 1st, 1914, to November 1st, 1915.

The question was asked by a member of the Board of Health: What have we to show for our work? This is a fair question, and will form the basis of this report.

Our main work is the prevention of disease, the prolonging of life, and, incidentally, the cleaning of the city.

Since our main endeavors are to lengthen life, the first question to ask ourselves is: How long did our citizens live last year, and the cause of death? Then it is proposed to point out the measures taken to prolong lives as well as the means that we should take and are not yet doing, and when the figures for 1915 are completed, to analyze them in a similar way and find out if we are improving from year to year.

If ideal life were possible, all born should live to be 70 years. Seventeen per cent. accomplished this, and 28 per cent. passed 60.

Seventy-two per cent. of the deaths were under 60 years. If we concede that these deaths were premature, then it must be our duty to find out the cause and remove it, so that each may live life's full term.

We are met at the start by the appalling fact that two-thirds of all these deaths were under four years of age, and of the one-third who died after four and before sixty it is quite likely that their vitality was undermined by disease in childhood. So, if the Board of Health wants to have something to show for its work, its efforts must be directed to childhood. If two-thirds of the untimely deaths occurred before four years of age, the natural question is: What caused these deaths? The real cause is not always evident, but my conclusions are:

Number of infants' deaths in 1914	122
Pre-natal causes and accidents at birth	52
Digestive troubles	26
Lung troubles	18
Contagious diseases	7
Various causes	19

Can we do anything to prevent these deaths? Probably 40 to 50 per cent. were due to inherited disabilities which the science of eugenics may some day overcome, but the Windsor Board of Health is not yet prepared for the marriage question. Correct living should save at least the other 50 per cent. of these infants; that is, their proper care should save from death as many as all those who died between four and sixty. The latter 50 per cent. lost their lives on account of bad milk, badly kept homes, bad heat, foul air, flies, bad clothing, and, generally speaking, lack of knowledge of what to do.

What have we done to overcome these evils? Inspection of milk and food; chlorination of the water; inspection of nuisances, such as manure piles and open closets; quarantine and disinfection of contagious disease, examination of suspected cases, antitoxin free to make immune to diphtheria, free vaccination, close watch for disease in the schools, and inspection of plumbing to avoid sewer gases. Windsor does not differ much from other cities, but I am not comparing cities.

Sanitary Education.

No mother wants her child to die, yet the babies are losing their lives owing to incorrect care. Surely the mothers would not persist in this dreadful waste of life if they knew better ways.

We have to thank the Metropolitan Life Insurance Company for circulating excellent pamphlets in the case of the baby. But for this education nothing could equal the work of a Board of Health nurse if we had one.

Milk Inspection.

No food is so useful for developing a sturdy race, and no food is so dangerous to human life. An appalling percentage of children have enlarged cervical glands, likely tubercular, and probably from milk. Our milk comes from many sources, and is often handled by many before it reaches the child. We have milk from farmers in the county of Oxford, and, if properly handled, is the best milk. We should control:

1. The health of the cow.
2. The health of the milker and family.
3. The cleanliness of the milker.
4. The care of all cans into which the milk goes.
5. The cooling of milk.
6. The care on the way to the station.
7. The care on the railway platform (the train often late).
8. The care in the railway car (cooled and steadied).
9. The care on landing at the station in Windsor.
10. On the way to the dealers.
11. The care at the dealer's, keeping cool and clean.
12. Pasteurization.
13. Bottling (clean bottles, cleanly bottled).
14. Keeping cool on the milk wagon.
15. Prompt delivery.
16. And, most of all, proper care in the icebox in the consumer's kitchen.
17. Probably more important still is the care of baby's bottle or cup.
18. Proper temperature and dilution at feeding.

All these items must be controlled by us, and not by an occasional analysis and the Police Court, but by constant supervision and instruction. The milk men are all willing to do what is right, if they know what to do. The same rules apply to milk produced near home. It can be done, and is being done, by our milk inspector, and will be better done if he can afford more time to the work. Tubercular meat may be cooked; tubercular milk is used raw. The best food in the world is milk, and the most dangerous food in the world is milk. The care of the milk after delivery is quite the most important item in the list, and I am sure a Board of Health nurse who would systematically visit and instruct young mothers would be a marvellous saving of life. Probably no other one disease or cause of disease destroys so many lives as milk.

Deaths in Decades.

From 3 to 10 years	4	per cent. of the total deaths.
" 10 to 20 years	3	" " "
" 30 to 40 years	10	" " "
" 40 to 50 years	5	" " "
" 50 to 60 years	8	" " "
" 60 to 70 years	11	" " "
Over 70 years	17	" " "

The deaths from 30 to 40 were many—seven of them from tuberculosis, probably acquired in childhood. Indeed, there is a strong suspicion that other deaths were due to decreased resistance from damage caused in childhood by disease.

Tuberculosis.

From this were 4 per cent. of the deaths, but probably 90 per cent. were infected. Sanitarium treatment is the best treatment for tubercle. What is good for sanitarium patients is good for anyone. Every home in Windsor should have every good thing any sanitarium has. Anyone planning a home should visit our sanitarium.

Typhoid.

During the past twelve months there were nine deaths from this disease—three of them from outside municipalities, but six of them using Windsor water. The chlorination of water will prevent most cases of typhoid if properly done. Any interruption in the process will fill the water pipes in a few minutes with highly dangerous water. Dr. McNally found that this probably did occur, and has given directions which will be followed and probably overcome this defect. Our typhoid cases have not been properly reported; only thirty-one cases have reached our books, but the mortality indicates a greater number. Eighty-one were reported last year, with five deaths.

Smallpox.

Thirty-one cases occurred; two of these were pupils of the Park Street School. In our investigations we found four cases that went through the whole course of the disease without being aware of what they had. No case reported to us infected anyone else. Owing to the occurrence of smallpox in Detroit, we have insisted that all pupils attending school in Windsor must be vaccinated. The Board of Health vaccinates free every Saturday afternoon in the City Hall. Gas, hot and cold water and bathrooms have been installed in our isolation hospital.

Diphtheria.

One hundred and twenty-seven cases were reported and six deaths; last year, 96 cases and six deaths. We furnish antitoxin free to immunize, and at cost price for treatment. The University of Toronto antitoxin gives good satisfaction.

Scarlet Fever.

No deaths, 22 cases reported. Last year, four deaths and 52 cases.

Failure to Report.

The other reportable diseases are being much better reported than formerly. For instance, there were 25 cases of chicken-pox this year, and none reported last year; but this year we had 23 deaths from tuberculosis, and only four reported; last year, 13 deaths and 12 reported. We confidently expect to have complete records for next year. The analysis of the death rate in this report is based upon last year's figures (1914). It is noteworthy that only four per cent. of the deaths occurred from contagious diseases.

EXTRACTS FROM INSPECTOR'S REPORTS.

Milk Inspection (Dr. Bowman).

The by-law respecting the production and sale of milk in the city of Windsor was approved by the Minister of Agriculture, May 4, 1915; therefore milk inspection has only been properly in form about five months. Two analyses and one bacterial count have been made. Special samples are analyzed almost daily with a view of safeguarding the infant.

Applications for milk licenses are approved after making an inspection of the applicant's premises and conditions are found sanitary. We are at present receiving about 100 cans of milk per day, which is shipped in from other places by railway.

The trains are met at the various railway depots, and milk cans inspected, particular attention being given to see that the milk is properly cooled and cans sealed. On making inspections of our outside dairies we make it a point to gain the confidence of the producers, and have always found them willing to co-operate with us for our mutual benefit. The city milk depots are making many improvements, and the owners seem always willing to make any changes we suggest for improving their milk supply. Probably the most troublesome problem is the so-called "back-yard" dairy, which usually lacks the proper sanitary facilities.

The butter-fat and total solids of the samples analyzed appeared somewhat lower than last year, but this condition is more likely due to the excessive wet season. A record of all infectious diseases along milk routes is kept, and whenever a milk supply appears suspicious it is thoroughly investigated.

I regret very much that this division has been unable as yet to do what it should do regarding infant mortality, but while we endeavor to see that the producer does his part by leaving a bottle of pure, unadulterated milk, properly cooled, at our city homes, there is much yet to be done in educating the good housewife regarding the care of the milk in the home.

Meat Inspection (Dr. Bowman).

About sixteen months ago meat inspection became a reality in Windsor. On taking charge of this work I found it necessary to map out a system for inspection in order to control the situation. The retail and wholesale stores and city market are inspected once a week. The slaughter-houses which are outside the city are inspected every five weeks. The wholesale wagons are inspected daily on the streets. Places found unsanitary are ordered to clean up, etc., and meats found diseased, contaminated or spoiled are seized and sent to the city incinerator.

During the summer of 1914 between five and six tons of meats, fish, fruits, butter, eggs, etc., were condemned and removed to the incinerator. There has been a marked falling off in the amount of food condemned the past season, largely due to the cool weather and the improved facilities for the proper handling of meats. The dirty, unsanitary wholesale wagon which existed at first is now almost a thing of the past, and while these wagons are yet far from perfection a marked improvement is noticed.

One of the greatest needs of this division is a public abattoir for the slaughtering of live stock under sanitary conditions, and where the inspector would be able to hold ante-mortem and post-mortem examinations of animals and carcasses in order to properly safeguard our citizens.

Quarantine Inspection (Thomas Hillier).

The statutory regulations are faithfully carried out in all reported cases, and much time is spent in looking up cases that should be reported. All contagious cases were quarantined and afterwards disinfected, and the schools and library notified.

It is remarkable how free the city is from contagious diseases during the school holidays. It is the mild, unrecognized case that spreads disease among school children.

Plumbing Inspection.

During the past year the inspections have been systematized. No one is allowed to lay drains or do any plumbing without a permit, and before this is granted plans drawn to scale, with specifications, are approved and filed in our office with the record of inspections. A new by-law—the joint effort of the journeymen and master plumbers—was discussed clause by clause with the journeymen, then the same way with the masters, and finally with the plumbing inspector. This is now in the hands of the council.

Extract from Inspector's Report (Henry Meadows).

Four hundred and twenty permits were issued for drains and plumbing. Six hundred and thirty-three inspections and 160 re-inspections—totalling 793 inspections—were made.

Inspection of Nuisances (W. N. Wheeler).

Any complaint that reaches us in any way is inspected, and the source of complaint is kept a secret. The inspector is also assistant secretary, and works in all departments.

During the year he made 1,362 inspections. In three cases only he found no cause for complaint. Owing to his activity fourteen houses and one barn were condemned, one restaurant closed up, 170 nuisances were abated, 63 owners were induced to instal sanitary conveniences and sewer connections; seven are being put in by the city for poor people. Next year the city will be expected to provide for about 45.

School Nurse, Under the Board of Education (Miss Drake).

A physical record, including a history of each pupil in public and collegiate schools, is kept in the principal's office. Recommendations to parents regarding physical defects of child are issued as necessary. Examinations are made as soon as practicable after child's admission to school, consisting of an examination for vision, hearing, cervical glands, tonsils, teeth (including any deformity of jaws), joints and spine as may be recognized through clothing, skin of face, neck and hands, scalp, the presence or absence of vaccination scars, recognition of any nervous disorders, and the general appearance of pupil.

First aid is given to any cases coming under notice, and simple dressings and applications where necessary. Class room and individual instructions are given. Circular form, "Care of Teeth," recommended by the Minister of Education, is enclosed with each reference card sent out.

A monthly report of each pupil recommended and each physical defect is kept and results noted. Special examinations are made of cases referred by principals or teachers.

Exclusions are made and exclusion forms with instructions are sent out in each case, or they are referred to the Health Officer for exclusion after diagnosis. These exclusions are made through the principal of the school. "Follow-up" work is only just now being done and some urgent cases referred to proper authorities.

Fifty-six per cent. of the children had decayed teeth. Doctors attribute rheumatism, neuritis, anæmia, and many other diseases to this cause.

Sir William Osler, the great Canadian doctor, said if he was asked which harmed the health of the public the more—alcoholic liquors or bad teeth—he would at once reply, bad teeth.

About 30 per cent. have diseased tonsils and adenoids, and 16 per cent. have enlarged glands—probably tubercular, often from milk.

ALLEY INSPECTION, UNDER BOARD OF WORKS (HENRY SEIBERT).

During the past year there were 7,931 loads of garbage, 151 dead horses and cows, one sheep, 60 dogs and cats were burned in the incinerator; and 2,375 loads of rubbish were taken to Sandwich marsh. This means that 5,941 tons of garbage were collected and disposed of—about 400 pounds for each inhabitant of the city.

WOODSTOCK.

DR. ANDREW MACKAY, ACTING M.O.H.

In accordance with the provisions of the Public Health Act, I herewith submit the Annual Report for the year ending 15th Nov., 1915.

During the year there were registered 213 births, including 12 still-births.

The deaths registered were 125, this includes the 12 still-births and 12 deaths of persons who were brought from outside to the hospital for treatment; this leaves 101 as the city deaths for the year, which gives a mortality rate of 10 per thousand as compared with 11 per thousand in 1914.

COMMUNICABLE DISEASES.

—	1914.		1915.											Total.
	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	
Chickenpox	2	....	3	10	20	2	5	17	4	....	....	2	....	65
Diphtheria	1	4	3	....	4	....	1	....	....	....	2	2	2	19
Smallpox	....	....	....	8	1	....	....	....	....	....	....	....	....	9
Measles	1	....	1	1	2	2	24	115	28	6	1	1	....	182
Scarlet Fever	....	....	1	....	....	1	....	....	....	....	....	....	....	2
Mumps	....	....	1	3	2	5	14	29	6	....	....	....	....	60
Tuberculosis	....	....	....	1	....	....	....	....	....	....	....	....	....	1
Typhoid	....	....	....	....	....	....	....	1	....	1	2	....	....	4
Whooping Cough	....	....	....	....	....	....	....	....	3	....	....	1	....	4
Totals	4	4	9	23	29	10	44	162	41	7	5	6	2	346

The unusually large number of cases of chickenpox, diphtheria, measles and mumps during the year, goes to show the negligence of the people in reporting the cases at the beginning of the outbreak. The warning given by the M.O.H. last year has not shown the desired result.

Meat Supply.

During the past year most of the slaughter houses from which the city's meat supply is procured have been improved, though much is yet to be done before the conditions are satisfactory.

Milk Supply.

The Veterinary Inspector visits the dairies twice a year and reports on the health of the cows and condition of the stables; the quality of the milk supplied, as to butter fat and sediment test has much improved during the year, but yet the monthly tests show low butter fat and sediment in some samples.

TOWN OF BARRIE.

Dr. A. T. Little, M.O.H.

I herewith present my report for the year 1915.

Vital Statistics.

Births	164
Marriages	37
Deaths	97

Contagious diseases reported to your secretary for the year 1915 and by way of comparison for the year 1914 are as follows:—

	1914.	1915.
Scarlet Fever	47	0
Typhoid fever	7	3
Smallpox	4	0
Chickenpox	22	7
Diphtheria	19	11
Tuberculosis	4	3
Mumps	9	8
Whooping cough	5	1

Deaths From Contagious Diseases.

	1914.	1915.
Diphtheria	2	1
Tuberculosis	8	3
Whooping cough	0	1
Typhoid fever	0	1
Erysipelas	0	4

All cases of chickenpox, mumps and whooping cough have been reported.

It is gratifying to know that typhoid fever is on the decrease, as the sanitary condition of a community can be judged by the number of its typhoid cases.

The following figures compiled from the annual report of our local hospital will prove interesting.

Typhoid fever treated at the Royal Victoria Hospital, Barrie, for the years following are:—

1905	74 cases	1911	20 cases
1906	58 "	1912	9 "
1907	55 "	1913	19 "
1908	41 "	1914	14 "
1909	50 "	1915	4 "
1910	50 "		

Dealing with the Death Statistics we find that twenty-two out of the ninety-seven deaths for the year were children under 10 years of age, and eighteen of these were under the age of one year. These figures are given to show how important it is to have a good milk supply, milk being the chief food for a child under one year old. It is the bottle fed child who succumbs to disease. Impure milk is a fruitful source of trouble among children, especially those diseases of tubercular or intestinal origin.

Our milk supply is not the best, during the year our Sanitary Inspector had 49 samples submitted to Dr. Brothers for examination. Our by-law calls for a 3½ standard for butter fat, some fell below this, but on the whole the tests averaged up well. The samples of milk were taken from seventeen different vendors. The milk has shown in many cases the presence of dirt, foreign bodies and remnant of hairs and other lack of cleanliness indicating the want of proper precaution in the milking and after care. The last testing, reported this condition to exist in some degree in all of the samples submitted. The producers and vendors should be made to comply with our by-laws.

During the summer months numerous complaints were received stating that the milk after the forenoon's delivery went bad, turned sour before evening and was unfit for food. Such milk must have been kept under improper conditions. Amendments should be made to our by-laws compelling vendors to make their delivery as in the larger cities early in the morning or in the evening or to have their milk packed in ice during the summer months at least.

By-laws governing the sale of fruit and bread should be enacted, more careful handling of these foodstuffs should be insisted on, fruit should be protected from refuse matter in the form of dust from our streets and from fly and dirt contamination. The dog nuisance on our streets should likewise be abated.

Our butchers have had to comply with more stringent regulations *re* slaughter-houses, in their construction and upkeep. Some have done their best to conform with these; others have given the Inspector no little trouble and were compelled to make necessary improvements. Much rmains to be done before all of them are kept in a sanitary condition. One slaughter-house or abattoir, properly equipped in a suitable locality, with town water or water from some other pure source of supply, under efficient management is greatly to be desired.

Our inspector has reported from time to time that our town dumps are kept according to the requirements of the law.

Garbage collection has been carried out in a satisfactory manner, weekly collections being made. Parties wishing to take advantage of the services of Mr. Johnston, the collector, can do so free of charge; upon due notification, a service will be given to all parts of the town. Every Saturday morning the Inspector visits the market to inspect poultry, eggs, etc. He reports the meat by-law as working smoothly. Meat is delivered to the market and butcher stalls covered as per regulation with cotton or other suitable material.

Two hundred manure receptacles have been installed as per regulations. Hotel and livery stables are well kept and fly nuisance greatly abated thereby.

The annual spring cleaning was done in a satisfactory manner, and, as in former years at the expense of the municipality. Many cess-pools have been closed and the number of dry earth closets are decreasing year by year. In 1912 we had 788 dry earth closets; in 1915 we had 676 dry earth closets.

Since 1912 we have extended our sewer system as follows: In 1913, 80 connections were made; in 1914, 72 connections were made; in 1915, 44 connections were made.

During the last three years 62 cesspools have been filled in.

In February the Board of Health was called on to furnish isolation quarters for one of our soldiers who had contracted diphtheria. A suitable house was obtained and a graduate nurse was put in charge. This house gave accommodation to other soldiers as an isolation hospital. The expenses were paid for in full by the Military Authorities. Our town should have an isolation hospital, so that any of our citizens could make use of it in case of necessity. It is an injustice that hotel and boarding house keepers should have to afford isolation hospital accommodation to their guests, interfering with their legitimate business and incurring the expenses and loss accruing from the quarantining of their premises, lifting responsibility for the care of our contagious cases from off the shoulders of the municipality.

The Board of Education in October engaged a graduate nurse to visit our public schools for the balance of the year, her first report to the Board shows the existence of many defects among the children, as enlarged tonsils, adenoids, defective vision, carious teeth, etc. It is to be hoped that this appointment will be a permanent one.

Our Sanitary Inspector reports that he has had considerable difficulty in forcing the health by-laws. Thirty-four summonses have been issued, with twenty convictions for infractions of the Health Act and Local Board of Health By-laws.

Your Board has held more than the statutory number of meetings during the year.

TOWN OF BROCKVILLE.

DR. A. J. MACAULEY, M.O.H.

In this, my annual report, while the number of infectious diseases appears unusually large, the sole cause can be attributed to the unfortunate outbreak of typhoid fever which occurred during the latter part of last year and the beginning of this.

The disease was epidemic in character and of a very malignant type, and notwithstanding the efficient aid given by our well equipped hospitals and their very competent staffs we had sixteen deaths in one hundred and eighty cases.

The cause of the outbreak was found to be due to a break in the sewer pipe about two hundred and fifty feet from shore, and the sewage was carried by an eddy that exists at that place directly into the intake pipe of our waterworks system and an increased amount of sewage was added to our already polluted water supply.

The break in the sewer pipe was repaired, the citizens enjoined to boil the water, and ten pounds per million gallons of Calcium Hypochlorite added to the water; this had the effect of cutting short the epidemic and as the majority of our citizens are still boiling the water for drinking purposes, or getting their supply from other and safer sources we are at least temporarily fairly safe.

Vaccination against typhoid has here, as elsewhere, been eminently successful, no case occurring in any subject who had been fully vaccinated, and only one in a patient who had received the first innoculation and had developed a temperature before receiving the second; this case, although a pretty severe one, recovered.

We received every courtesy and most valuable assistance from Dr. McCullough and his staff during the epidemic, Dr. Moloney, the District Officer, and Mr. Dallyn, the Engineer of this Department visiting us during the outbreak, and Dr. McCullough and Mr. Dallyn visiting again in July.

A new intake pipe, made of drawn steel, thirty inches in diameter, has been installed during the summer, and while this will undoubtedly aid in preventing an epidemic such as we have passed through, it will not insure our citizens a pure water supply, and such can only be obtained by installing a suitable filtration plant.

Of diphtheria there have been 13 cases, scarlatina, 17, chickenpox, 3, smallpox, 1 and measles 1, this number is much smaller than usual notwithstanding that all were treated in their homes.

Tuberculosis still leads in the number of fatalities, eighteen deaths occurring from this disease during the year.

Our sewer system has been extended over three thousand feet during the year, exclusive of the one on Ormond Street now under construction; many new sewer connections have been made during the past year, and only seventeen remain over from last year.

Our milk supply has improved and is now nearly all handled in the most cleanly and up-to-date manner. One hundred and nine samples have been examined and all were above our standard for butter fat. They are now all clean, free of water and delivered to customers at a temperature below fifty degrees Fahrenheit, and full reports of examinations are reported in our local daily papers.

Our garbage collection is giving excellent satisfaction, with no complaints during the year.

W. G. JENKINSON, SANITARY INSPECTOR.

I beg to submit the following report for the year ending October 31st, 1915. The number of contagious diseases reported this year were as follows:—

Disease.	No. of Cases.
Typhoid Fever	180
Diphtheria	13
Scarlet Fever	17
Measles	1
Smallpox	1
Chickenpox	3

Seventy-seven fumigations have been performed of schools and dwellings and premises have been placarded when required.

One hundred and nine samples of milk have been collected from the different vendors at nine different times during the year, for testing by the Medical Officer of Health.

The bakeries and butcher shops have been regularly visited and found to be kept clean.

There are at present thirty-nine closets which are not connected with the town sewer system within the area in which such sewer system extends. Most of these closets are in the area where new sewers have been recently constructed, and being so late in the season would suggest to leave these over until next spring.

Inspections of yards and premises have been regularly made, and same were found to be generally clean.

A large number of complaints have been received and dealt with accordingly.

Our regular collection and disposal of garbage is giving much satisfaction, and also our tin can and refuse collection.

The isolation hospital has been visited regularly and is ready for occupancy if needed.

D. McAlpin, Veterinary Inspector.

In this, my annual report, I wish to assure you of the present good health of the live stock in this district.

We had one outbreak of anthrax among dairy cattle, but by rigid quarantine and vaccination it was held under control. Septicaemia and hæmorrhagica appeared in some localities and was quite fatal, especially among the young stock.

The conditions under which the dairy cattle from which the town's milk supply is procured have undergone some changes for the better, the stables being better lighted and ventilated and given an application of lime wash, these being very essential in the production of good, healthy milk. Fewer cattle were removed from the dairy herds for chronic constitutional trouble than in any former year.

The slaughter houses are being used less each year, there being but three in use; these have the necessary appliances for carrying out the provisions of the by-law with respect to the cooking of offal and are generally kept in a sanitary condition.

A large proportion of our meat supply, especially the light carcases, such as mutton, veal, etc., is brought in from the rural districts and the conditions under which these are slaughtered are not under our control.

I have investigated some complaints as to the meat and fowl offered on the market and have found such well founded.

Owing to the frequent outbreaks of hog cholera in Canada, a number of which were directly traceable to the feeding of raw garbage containing scraps of imported ham and bacon, the Federal Government has taken over control of the conditions under which garbage can be fed. Proper sanitary condition of pens and surroundings, suitable appliances for the proper cooking of garbage, etc., are necessary for the obtaining of a license. This, in my opinion, was a much needed reform and will materially assist in keeping Canada free from the dreaded hog cholera.

TOWN OF BURLINGTON.

Dr. A. H. Speers, M.O.H.

In accordance with the provisions of the Public Health Act, I have the honour to submit the annual report for the year ending December 1st, 1915.

Contagious Diseases.

As regards scarlet fever and diphtheria, the public usually call in a physician early and thus a diagnosis is made, and quarantine put into effect, but in the case of measles, mumps and whooping cough in many cases a physician is not summoned, consequently the disease is spread and the mischief done before the M.O.H. is aware of the existence of the disease.

We have had during the year four cases of diphtheria, one in one home and three in another. In the case of the family of three the mother aged 47 years was quarantined from Feb. 20th to June 17th, the swab from throat and nose showing the presence of the diphtheria bacilli until they were declared non-virulent.

There were five cases of scarlet fever of a very mild type, no deaths.

Tuberculosis, two cases, no deaths.

There were two cases of mumps reported, but there were a good many cases not reported.

There were fifty cases of whooping cough reported, no deaths, isolation being difficult to enforce. Concerning measles there were 100 cases in the earlier part of the season, the disease being most contagious in the stage of invasion, a great many children were exposed at school before the trouble was recognized. The quarantine was carried out fairly well. We are fortunate in not having had a case of typhoid fever in town since the installation of the waterworks system, six years ago.

No cases of chickenpox have been reported.

Water Supply.

Samples of the town water have been sent to the Provincial laboratory about once a month and though in some samples the colon bacilli have been found they were not in sufficient quantities to be harmful.

On the recommendation of the Local Board of Health a sewerage system was ordered by the Provincial Board of Health to overcome the danger of pollution to the water supply from the drainage of septic tanks and cesspools into the lake. The sewerage system is being put in.

The Medical Health Officer and Sanitary Inspector have made two trips to the several dairies supplying milk to the town and for the most part they are complying with the provisions of the Milk By-law of the town, and the inspections have had a very beneficial effect.

The milk is tested occasionally to see if it is up to the standard in butter-fat, the lowest test being 3.4.

In the earlier part of the season a garbage system was ordered by the M.O.H. but the Council have neglected to pass the necessary by-law.

In regards slaughter houses, there are two supplying meat to the town, one within the limits of the town and the other in an adjoining township. Both have built new slaughter houses, which, when completed, will comply with the Regulations.

Concerning manure receptacles, a number have been built, complying with the Regulations, and when this regulation is generally observed I am sure that the menace from flies will be lessened.

Inspections have been made of the milk depots, bakery, butcher shops and schools at intervals, all of which have had a highly educational effect.

TOWN OF COBALT.

Dr. T. C. McLaren, M.O.H., R. L. O'Gorman, Secretary.

Your Local Board of Health beg leave to report as follows on the activities of the Board and of the Medical Health Officer during the present year:

On the whole, the health of the people has been exceptionally good and for this reason only the four meetings, which are required, were held.

The following is a list of the different cases of contagious diseases which occurred throughout the year:—

31	cases	of	smallpox.
2	"	"	diphtheria.
13	"	"	scarlet fever.
8	"	"	typhoid fever.

In addition to these, there were a large number of cases of measles, some of which were not reported to the Board, but in every case where this disease was discovered the house was placarded and the results were satisfactory.

The epidemic of smallpox broke out in May and June, and the Board found it necessary to compel the vaccination of school children, which was done with great satisfaction, there being over six hundred children successfully vaccinated. Each case of small pox was quarantined either at home or at the Isolation Hospital on Haileybury Road. The diphtheria and scarlet fever cases were also quarantined. The scarlet fever in many cases was of such a mild type that no doubt many cases were not seen by doctors and therefore spread the infection.

The town has been fortunate in the matter of typhoid fever, which is a disease attributable principally to water and milk conditions, though the infection is often carried by flies or may occur through local unsanitary conditions. Of the eight cases which were found, at least two have been traced to outside municipalities and the others may have been brought to town from elsewhere or may have been due to flies or unsanitary conditions in the premises where the disease occurred.

The Board has been very careful in supervising the milk and water supply. Every milk vendor selling milk in the town is provided with apparatus for sterilizing bottles and cans and for cooling the milk.

Two samples of water were taken each month and while the analysis shows water taken from the surface of the lake to contain bacteria of intestinal origin from time to time still the samples taken from taps were always found to be good.

The Board was instrumental in having the Township of Coleman pass a by-law prohibiting boating or canoeing on Sasaginaga Lake and other tributary lakes.

The Medical Officer of Health has also inspected the schools from time to time.

In closing we wish to say that the town is at present in good sanitary condition and there are very few medical cases in the hospital.

TOWN OF COCHRANE.

Dr. D. R. Cameron, M.O.H.

As Medical Health Officer for the last few months it becomes my duty to submit a report on the general health and sanitary conditions of the Town during the past year.

The following figures obtained from the books of the Town Clerk will afford some information. The number of deaths recorded during the year were 29 and of these 13 were from outside the Corporation limits. As to the remaining 16 cases, 11 were children under one year; 2 were 14 years of age; 1 was 38 years and the remaining 2 were 62 years old.

Now, 11 deaths under the age of one year out of a total of 16 is an unduly high infant mortality, but when taken in connection with the number of births recorded (108) it does not look so badly.

The causes of death of these 11 cases is as follows: 2 ileo-colitis; 4 debility; 2 convulsions; 1 dedoema; 1 heart failure; 1 whooping cough. This last, the only death from a contagious disease during the year. Of the 11 deaths under one year of age, there were but two of ileo-colitis, that deadly foe of the child.

There were two deaths 14 years, one tuberculosis and one rheumatism. The case of tuberculosis was a ward of the Federal Government; and by the way, there are at present some wards of the State within the town limits who are also affected with the white plague. Of the adult deaths one, 38 years, was due to nephritis; two, 62 years, to heart failure; making a total for the year of 16. Births were recorded during the year, 108; marriages 19.

As to the general health, contagious diseases were reported as follows: Typhoid, 1 case; whooping cough, 4 cases; chickenpox, 10 cases; erysipelas, 1 case; with one death from whooping cough.

One question that engaged the attention of the Board at different times was pigs and the keeping of pigs within town limits. A town lot is 66 feet by 132 feet, and the by-law calls for a distance of 100 feet between any dwelling and a pig pen; on a town lot it is difficult to get that distance. However, all pig pens were kept in a cleanly condition, but if the town authorities wish this by-law adhered to strictly, pigs will be banished from the town limits.

Milk samples were taken in the early part of the year and found to contain more than the required percentage of fat.

The work of the town scavenger has not been without fault, but the work has been handled in a better manner than in former years.

Water Supply.

On taking office in July, my first work was in connection with the town water supply. I found that the supply came from three different sources, spring wells, springs and Spring Lake. The water as obtained from the taps was dark and of an unpleasant taste and odor and carried a heavy amount of a dark reddish brown material resembling iron rust. Samples of water were taken from the taps and found to be contaminated; samples from Spring Lake and from the Springs, i.e., the overflow about the pipes, were also found to be contaminated. Next the pipes were sampled and the shallow ones were found to be contaminated while the water from the deeper wells was pure. At a meeting of the Board of Health I presented this information. The public were warned to boil all drinking water and the Council were asked to carry the sewage beyond Mackey Lake; to conduct the overflow from the Springs beyond Spring Lake; and to sink additional wells to a depth of about 55 feet. This has been done although the mains have not yet been connected up. But the carrying of the sewage beyond Mackey Lake and conducting of the overflow beyond Spring Lake has already shown a change in the water. It is practically free from the reddish sediment and is more palatable, and when the new wells are connected we hope to have an adequate supply of pure water for all town purposes. I would estimate the flow at 225 gallons per minute.

For myself I wish to tender my thanks to the other members of the Board of Health for their assistance and co-operation.

TOWN OF CORNWALL.

DR. C. J. HAMILTON, M.O.H.

As required by statute, I beg to submit to you my annual report as to the sanitary condition of the town.

I am pleased to be able to state that the year just coming to a close has been a very favorable one as far as the sanitary condition is concerned.

In the early part of the summer we had a very large epidemic of measles, and some scarlet fever, but as they were of a very mild type, and accompanied by no fatality, it was a particularly easy epidemic to control. Placarding was vigorously resorted to, strict quarantine and disinfecting followed out, and in this manner the epidemic was soon under control.

We had also some few cases of typhoid fever, but the only fatal ones which occurred were patients in the several hospitals and they had come from outside municipalities.

There were very few cases of tuberculosis in the town and what cases there were, complied thoroughly with the requirements of the Public Health Act.

The water system of the town is in perfect condition and a very full and careful analysis, both chemically and otherwise has been made by the Provincial Board of Health, and the reports obtained have been most satisfactory.

The sewers of the town have been well cared for, attended to by the Sewer Committee of the Council, and we have no complaints as to defects of same.

The municipality has also secured a very good dump ground, and, as it is now under careful supervision by a caretaker, we should have no further trouble in connection with it.

The schools have also established the rule for vaccination of all children before permitting them to attend, and this will have a good effect in protecting children from smallpox.

The Provincial Board of Health has decided to furnish, free of cost, the diphtheric serum for use in cases of diphtheria, thus enabling our medical men to give the most potent treatment at the earliest possible time.

I have to express my appreciation of the manner in which the medical men of the town have assisted me in the discharge of my duties as Medical Health Officer, by complying with the requirements of the Health Act, by notifying me of all communicable diseases.

I have again to draw the attention of the Board to the fact that we have not as yet any Isolation Hospital, so that in case of an epidemic of smallpox coming upon us, we have no means of dealing with the same, and I would strongly recommend that the Board take this matter up with the Council, with the view of having some movement take place as to the establishment of an Isolation Hospital.

TOWN OF INGERSOLL.

DR. F. D. CANFIELD, M.O.H.

Herewith I beg to submit Report of M. O. H. for the Town of Ingersoll.

Having been appointed M. O. H. about March 1st last, I can only report since then.

During the spring and early summer there were many cases of measles, whooping cough and mumps. None of these were reported to the authorities, and no attempts at quarantine or even isolation were made by the parents or guardians of the affected children, some of whom freely went out, mingling with their fellows, and in a few cases even continued attending school. This could have but one effect—dozens of cases instead of units, sickly and weakened children with low powers of vitality, some cases of tuberculosis among those weakly ones, because they were unable to successfully resist the infection in their weakened state, and, saddest of all, some newly-made graves in the cemetery—all of which could have been avoided but for the Old Wives' tales of "Not dangerous," "Not afraid of infection," "Got to have it, anyway," "Officious officers of the Board of Health," etc. If there be not a severe judgment in store for people of this class, I am mistaken.

A number of fatal cases of typhoid fever occurring in one small area were investigated. It appeared that they all used well water, which, upon examination by the Branch Laboratories of the Provincial Board of Health at London (Institute of Public Health), were pronounced beyond safety for human use, and the wells were promptly closed against further use; but the graves of two mothers of families closed first, and this could have been avoided by the exercise of a minimum amount of common-sense.

But this is a free and democratic country, and we will do as we please in this as in every matter, and will use bad water if we want to.

I was called upon to report upon an unusually severe case of typhoid fever about midsummer. This was imported from somewhere near Embro, and was brought to my attention by the M. O. H. of that village. Its origin showed a degree of obstinacy in evil-doing and a degree of ignorance that is beyond credence, viz., a dead animal (sheep or pig) was allowed to lie upon the ground and decompose within a few feet of the open well whence the people drew their water supply. The rest of the premises was in keeping. The head of the house refused to remove this dead animal, saying, in effect, as I quoted above—"a free country," "will do as I please," etc., etc. I understand that three useful human lives were lost by this conduct.

My next experience as M. O. H. presents a happy contrast to this, viz., a citizen had been in Pontiac and Detroit, Mich., whence he went to Toronto. While in this latter place he was taken sick with chills, fever, severe backache and a cough, and called a physician, who pronounced it pneumonia and advised hospital treatment. The patient, however, came home by the G. T. R., taking an enclosed cab at the station; was driven home on a Wednesday night. On the Friday a rash appeared on the forehead, and on the Sunday smallpox was diagnosed and the usual quarantine and isolation established; he and his family doing absolutely everything they could to help the M. O. H. in his duties. He was nursed by his wife, and the case ran an easy and rapid course, though at first it looked unpromising. A cause of great anxiety was the fact of his prolonged exposure in Toronto, in the train and cab coming home, and also the fact that his two daughters, employed in stores in town, continued going to business for three days after the father came home sick. The daughters were at once isolated and vaccinated, and to date no new cases have been reported. An item of interest is that the vaccine used was over a year beyond "returning date" in age, yet in every case it took freely. It was P., D. & Co.

Specimens taken from different points of the municipal water system were forwarded to the London Institute of Public Health, and the results were in the main favorable. These reports are sent you by the secretary. No cases of disease traceable to this source have been revealed during the year.

The various factories of the town were from time to time inspected. The Borden Condensed Milk Company, a huge plant, employing many male and female operatives was, as far as the factory and machinery went, in ideal sanitary condition, but in the various toilet and retiring rooms, both for males and females, certain minor defects were found, such as unclean towels, leading to the spread of infectious skin diseases and trachoma. This was remedied at once. The traps and toilet rooms were in good condition. Of the various plants of the Morrow Company no inspection was made. This is a plant employing upwards of five hundred skilled men in the making of empty and loaded shells and other war munitions. An inspection was not insisted upon, first because an intimate knowledge of the character and intelligence of the men at the heads of the different plants led me to firmly believe that conditions were as they represented, and this was good. This plant is under the closest inspection, day and night, of inspectors from the Allied Governments for whom they prepare these munitions. The plant of the Ingersoll Packing Company was treated similarly for the same reasons; but all the other factories and places were visited, some minor defects pointed out and a remedy found for each.

The schools were visited. The sanitary arrangements of the Central were found to be bad. The outside privies and urinals were in a scandalous condition, both boys' and girls'. In the former were accumulations of unspeakable filth on the floors, and in the latter unthinkable inscriptions and writings on the walls. These were pointed out to the proper authorities and remedied. The Ward School and Collegiate Institute were found to be well kept. Among the scholars were found some cases of adenoids and trachoma. These were reported to the parents and medical attention recommended. The separate school was found to be in the most satisfactory condition, the privies free from obscene inscriptions and clean. This good condition I put down to the fact that always there is with the pupils in their play hours a member of the religious order (usually a sister), having control of the school. Would it not be advisable to have this idea extended to the national schools. Good would certainly come of it.

The various slaughtering places and dairies were also visited and a report on them goes forward from the secretary.

The works of the Stone Fertilizer Company were also inspected. This is a difficult proposition, as it is hard to make fertilizer and not make a smell. Part of the process is the boiling of decomposing carcasses in gasoline, under high pressure. Complaints were heard from time to time of the smell and a rigid inspection made and the manager interviewed. It appeared that the bad smell was emitted only when a careless workman left a certain valve closed, which was in a pipe which led these fumes to the fires under the steam boilers. They were so acted upon by the fierce heat of the soft coal

fires as to be innocuous and unnoticeable. When this is seen to no smell is emitted and no complaints made.

I note with pleasure that one of our dairymen has installed an apparatus for pasteurizing milk. This, I consider, a most valuable asset to the community at large, and hope the venture may prove the success financially that it will be sanitarially.

Deaths.—Four from cancer and one from enteric during the year.

TOWN OF NORTH BAY.

DR. EDGAR BRANDON, M.O.H.

I beg leave to submit my Annual Report as Medical Officer of Health of this municipality.

During the year there were the following cases of communicable diseases reported:

	1915.		1914.
	Cases.	Deaths.	Cases.
Measles	353	5	12
Scarlet fever	1	0	44
Diphtheria	4	1	10
Chickenpox	25	0	7
Tuberculosis	..	9	4
Typhoid fever	10	4	3

Up to the date of compiling these statistics there were 150 deaths in the town, of which 32 were due to still-births or accidents of pregnancy; pneumonia took off 12 cases; heart disease, 12; accidental deaths, 8; diarrhœa and enteritis, 30; tuberculosis, 9; other variable causes, the balance.

MEASLES.

During the year we had a very widely spread epidemic of measles, some 353 cases being known to us, and undoubtedly many more were never reported but kept hidden in the homes. Without any doubt, this and allied diseases are spread through contact at the schools. Children in the invasion period attending classes, and in a highly communicable state, spread the disease among their schoolmates. We had great difficulty in securing the co-operation of parents in isolating these cases, and in many instances it was impossible to secure proper care. We are of the opinion that the number of communicable diseases can be materially reduced by the employment of a truant officer to all the schools, who would also be a sanitary inspector, thus clothed with authority to investigate any suspicious cases he came across in the course of his work as Truant Officer. He would then be enabled to isolate cases at the time when they are most contagious.

TYPHOID FEVER.

We have knowledge of but ten cases and four deaths, and it would thus appear that the cases are not being reported as the law requires. With one or two exceptions all these cases were patients in the hospital. Four very severe cases came in from outside points; three recovered, but subsequently there were several other cases, possibly traceable to these sources. In spite of the infection in our water for several months of the year, there was no epidemic, so that the cases that occurred were due to other causes than the water.

TUBERCULOSIS.

Only four cases of tuberculosis were reported, yet nine deaths were due to this cause. The obvious deduction is that these cases are not being reported to the Department of Health.

INFANT MORTALITY.

Total deaths under two years for 1915	17
Total deaths under two years for 1914	18

From 1903 to 1914 there were 95 deaths due to diarrhœa and enteritis; 33 occurred in the month of August and 26 in September. In 1914 there were 28 deaths due to diseases of the digestive tract, of which 18 were in children under two years. This means that these lives are being lost principally through infection conveyed in milk. We shall deal with the milk aspect of this subject a little later in the report.

Water.

During the year routine examination disclosed the unpleasant fact that our heretofore splendid water supply was becoming polluted with sewage. We have had samples taken frequently throughout the summer and fall, and it is only lately it has cleared up. In my last Annual Report I drew attention to this question of pollution by summer tourists and feared such a condition as arose this year. We found about forty residences situate on or adjacent to Trout Lake, apart from those at Trout Mills. Many of these are summer residences, and it was a noticeable fact that, not long after the exodus of these summer tourists, a material improvement took place in our water samples—rather conclusive evidence of the sources of infection. We inspected all these houses and found conditions fairly sanitary, but it is impossible to eliminate the infection due to discharges from people in and around the shores, as we have no control over the shore lines or the lake itself. We corrected many noticeable sources of contamination, but it did not clear up the water. Fortunately there were no cases of typhoid arising from this infection, but nevertheless it confronts us with a serious situation that must be dealt with, as another year may see us up against a big typhoid epidemic. There are several ways that are open to us to prevent this possibility—chlorination of our water or filtration. A filtration plant will cost us $15,000 or $20,000 to build, while a good chlorination apparatus can be secured for about $1,000. There is an objection to chlorination because of the unpleasant taste and smell of the water, but I feel sure that it will not be noticeable in our water because of its softness and the large amount of organic matter in it which would practically take up all the free chlorine and do away with this objection. This apparatus can be installed in the pump house and operated at no additional cost save for the cost of the chlorinated lime. As it requires only .4 to .5 parts of free chlorine to a million parts of water to destroy in ten minutes all typhoid and colon bacilli or other dysentery-producing organisms in the water, it is obvious we have a simple and effective method of purification at our disposal. The annual cost to us would be about 25 cts. per million gallons pumped, or less than 50 cts. per day, and as we would not need it throughout the year, but principally during the summer months, the cost would not be excessive and should not exceed $100 per year. I would, therefore, suggest the installation of such a plant as being the cheapest and quickest means of preventing trouble arising out of pollution to our water supply. Failing this installation or filtration, Council must take the responsibility for what may happen in the future, more so since the Provincial Sanitary Engineer urgently advises the removal of the pump house away from the stagnant Bay to open water, where there is greater movement.

Sewers.

A number of needed sewers were constructed this summer. These were endorsed by the Board of Health and sanctioned by the Provincial Board, thus obviating resorting to a vote of the people. Many nuisances, such as on Jane St. West, have been removed. The Council is to be congratulated on the adoption of my last year's suggestion *re* trunk sewer, the first section, from Regina and Oak to Sherbrooke and Main Streets, of which is now under construction and which will relieve urgent troubles on Oak Street. The Special Committee, composed of the Board of Health and Public Works Committee, brought in a report adopting the scheme as carefully investigated and reported upon by Town Engineer McAuslan. I trust the balance of the scheme will be submitted to the people and endorsed. This trunk sewer will give sewer service to a large section in the Fisher Street district, Wallace Park section, and also serve the Grandview, Morin and Model City Sub-divisions, all of which cannot be served without it. It will also overcome the misuse of the storm sewer as a sanitary sewer, now being used by upwards of seventy-five houses. There is also another serious evil to be cured, to wit, the habit of the Public Works Committee relieving difficult sewer troubles by sidetracking the sanitary into the storm sewers, notably at the corner of First Avenue and Ferguson Street, and at the corner of First Avenue and Sherbrooke Street. These actions are wilfully illegal and leaves the corporation open to a severe penalty.

The question of sewage disposal is becoming more and more an important question. Our present septic tanks are far from efficient and I feel certain are very inadequately treating our sewage, which is being run into a large navigable body of water, quite contrary to law. This question will be forced upon the provincial authorities sooner or later, whether we like it or not, and it would be wise to give this matter careful attention and investigation.

Garbage and Nightsoil.

The collection of nightsoil has been continued under the same system as previous year, though by another contractor. Few complaints reach us now, so that the arrangement is as satisfactory as possible. The disposal of this excreta is still the very weak spot. I have in previous years advised the purchase of an incinerator, but no move has been made in the matter. I still earnestly advocate its purchase. We have endeavored to keep the excreta well covered and drainage effective, but it is a very serious situation, particularly in summer time, from fly infection. My suggestion of last year that this excreta be turned into properly constructed manholes, and flushed into the sewers, still holds good, for at least six months in the year when danger is most likely. This would overcome another serious objection—the odor—which is seriously objected to by residents of Widdifield Township. We had a complaint from their Board of Health regarding this dump, and I feel certain under the Public Health Act they can force us to abandon its use if they so desire. If the system of flushing into the sewers were adopted, particularly during summer months, a good deal of the cause for complaint would be removed, as well as providing a more sanitary disposal of the sewage. However, an up-to-date incinerator, which can be purchased for $15,000, is the proper solution of this problem, as even with the best of care and supervision the present method will create trouble and nuisances.

Milk Inspection.

During the year twenty dairymen registered with the Department and only twelve were found eligible and were granted licenses. We have noticed a very marked improvement in the equipment of the dairies supplying the town and, with one notable exception, we have found an earnest desire to meet our requests for improvement in their barns, dairy buildings and utensils. I have made several visits to these dairies along with the inspector, and I think the town is to be congratulated upon the improvement effected this year. We have made repeated tests of the milk and all have come up to the requirements for butter-fat, and with two or three exceptions the dirt tests have shown improvement. We have colored forty gallons with a harmless dye and returned to the producer. These dirt tests are open to inspection at the town hall. It is our intention to see still greater improvement in the cleanliness of the milk supplied to this municipality. Last year (1914) there were 28 deaths in North Bay due to diseases of the digestive tract, of which 18 were due to diarrhœa and enteritis in children under two years of age. Sudbury, with a smaller population, had a total of 47 deaths and 28 were under two years. This goes to prove the need of cleaner, purer milk, because milk forms the bulk of the child's diet in its first few years of life. The conveyance of tuberculosis to children via milk is a certainty that cannot be contradicted, and so long as raw milk is consumed by children so long will they be open to this disease and diarrhœal states. Pasteurization certainly will eliminate all these organisms and, sooner or later, I feel this will be ordered by the Province as a sure method of stamping out this form of tuberculosis and materially reducing the death rate in children. It would appear to me that this could be materially helped by the employment of a nurse, whose duty it would be to visit every home where a baby has recently come, and instruct the mothers in the proper way to nurse and feed their babes. In the foreign quarters of the town a great deal can be done to improve the conditions and food of the infants, and without doubt many lives conserved. Big dividends would be thus returned on a small outlay. There is no place among our vendors of milk for the man who is uncleanly in his habits or equipment, and the production by him of milk showing visible dirt will only merit the cancellation of his license to sell in this municipality.

Market and Food Inspection.

The establishment of a market in the town created conditions demanding our inspection and supervision. The handling of meat, butter, etc., from open rigs in the streets was decidedly wrong. By co-operation with the Market Committee, the present makeshift building was erected. It is altogether too small and inadequate to accommodate the farmers or general public. Better facilities should be provided for the exposure and cutting of the meat and properly weighing and wrapping of the same. There has been a disposition on the part of some members of the Council to resent our Department inspecting the market and objecting to conditions found there. This should not be, as there is as much need here as elsewhere in town. Meat is sold which has not been inspected prior to killing; the conditions or places under which it is killed are unknown, and it is quite within the bounds of possibility that diseased cattle are being killed and sold here. Over five per cent. of the cattle at the abattoirs

of the Province are culled and rejected while still on the hoof, and a great many more post-mortem, and it would appear that if this meat market is to continue a meat inspector should be appointed to see and inspect the animals before being killed. I believe the farmer's product demands inspection just as much as that at the abattoirs. There is a Provincial regulation governing the slaughtering of animals and it provides for sanitary and modern killing facilities which would appear to operate against the farmer save for beef ring arrangements. However, a broader interpretation by the Chief Medical Officer of the Province, given to me in a letter dated November 10th, states that the regulations are intended to read that the cattle must be killed under clean and sanitary conditions, and not necessarily requiring a modern, up-to-date abattoir.

Municipalities are now going into the abattoir business. Fort William, at a cost of a few hundred dollars, remodelled a slaughter house, and, charging a small fee, in the month of November took in fees amounting to $118.55. A similar plant operated here would give equally as good results, and all our meat would then be inspected. All meat so killed is stamped, showing it was killed under good conditions and properly inspected.

Refuse around the market should be disposed of after market days, and not allowed to accumulate on the streets as heretofore.

Conclusion.

During the year we have received material help from Dr. George, District Health Officer, Mr. Geo. Young, Provincial Sanitary Inspector, and also from Mr. Dallyn, Provincial Sanitary Engineer, and to whom we extend the thanks of the Department. These men spent considerable time, especially in looking into the contamination of our water supply, and at all times we have found them very willing to render us any assistance they could. Mr. White, Sanitary Inspector, has actively and conscientiously discharged his duties as Sanitary Officer, Milk and Plumbing Inspector, as well as supervising the garbage collection and disposal. In addition, he has done many duties which were more properly the work of Council, and outside his official purview, but which was done to facilitate the town's business. I would recommend his salary being raised slightly and a telephone given him in his home as well as one direct to his office, instead of the present unsatisfactory switching arrangements.

Alex. R. White, Sanitary Inspector.

I beg leave to submit for your consideration my third Annual Report as Plumbing and Sanitary Inspector of the town of North Bay, for the year dating from December 15th, 1914, to December 15th, 1915.

I am pleased to be able to report to you that, with the exception of our measles epidemic of last winter and early spring, we have had a reasonably clean and healthy town during the year. It is true that much remains to be done in the field of sanitation, but I am sure that you will agree with me that we are progressing, and that the Department of Health is paying good dividends on the amount of money expended.

Sewers.

The building of the first section of large trunk sewer on Oak Street will relieve, and I think permanently cure, nuisances which have been arising from time to time on this street for the past three years. I have never entered premises on this street during the above mentioned period, in the discharge of my duties, without the feeling that it would be altogether likely the first question I would be asked would be, "How can we keep our premises in sanitary condition when the sewer backs up and fills our basements."

The construction of the various short sanitary laterals throughout the town will also clear up a large number of unsanitary conditions, such as cesspools which, being built in ground which will not admit of soakage, are a continual source of danger. A large number of these will be dispensed with as the result of these sewers being built.

I am pleased to learn that the balance of the proposed Trunk Sanitary Sewer Scheme will be submitted to the electors for their approval, and I am sure will be carried by a large majority. To enforce strict sanitary measures in the section of the town that this sewer is calculated to drain is well nigh impossible, and the fact that the trunk sewer is urgently required is well borne out by the fact that practically the whole of First Avenue sanitary sewer has been diverted by the municipality themselves; this being an admission that the existing system will not carry the load. The proposed system will be a permanent cure as far as the pollution of Chippawa Creek is concerned, the said creek at this time being grossly polluted.

Plumbing.

This has been a very lean year in this branch of public health work, chiefly caused by lack of building. Forty-seven jobs are all that have passed through my office as against 148 jobs the previous year. This work has all been inspected, examined, and finally accepted, condemned, or altered, as the case may be, your by-laws being enforced in every case, thus ensuring the party having the work done of a good, sound job. I may say that the class and quality of work done in North Bay is equal to that executed in most of the cities. I have estimated the cost of all work which has passed through the office during 1915 at $7,520, as against $25,140 the previous year.

Communicable Diseases.

We began the year with a measles epidemic which, before we succeeded in getting under control, had assumed very large proportions, several deaths resulting therefrom. The work of investigating and attending to these cases practically occupied my whole time from February until June, nearly five months, and I may say that without the assistance of temporary inspector, Mr. Dyer, I would have been unable to handle the situation whatsoever.

The chief reason I think for the extent of this epidemic lies in the fact that, owing to the large amount of work to be handled by this Department, we were not able to visit and examine the homes of scholars who were absent from school, say, during the first four or five days, when the patient is real sick. After this period had elapsed there was usually very little evidence left to connect the sickness with measles. We did, however, by this method find a good number of hidden cases.

A great help in the controlling of contagious diseases lies in the hands of a good, energetic truant officer, who will visit the home of every absentee from school and insist on seeing the scholar, and, if sick, report the matter at once to the Medical Officer of Health, when proper steps will be taken to enquire what the trouble is, and no pupil should be able to absent himself, or herself, for more than two days without the said officer having some knowledge of why the scholar is absent.

The option of allowing the breadwinner to enter or leave the quarantined house under certain conditions as prescribed in the Regulations should, in my opinion, be dispensed with, it being just as easy for the said breadwinner to carry the infection as the rest of the family. I maintain that unless the house is an extraordinary large one, and has a good layout regarding conveniences, isolation is a failure. Strict, rigid quarantine is, in my opinion, the only successful manner in which to grapple and control contagious diseases.

The number of cases for year 1915 in detail is:

	Cases.	Deaths.
Measles	353	5
Scarlet fever	1	..
Diphtheria	4	1
Chickenpox	28	..
Tuberculosis	2	2
Total	388	8

All of which have been duly quarantined and when released duly disinfected. I have also by resolution of the Council prepared a bill for amount of material used in connection with each case and mailed same. The average cost of disinfecting each house would be about $1.05.

Garbage System.

Our equipment consists of one team of horses and a large wagon, and operates under the Scavenger By-law. Collections are made three times per week from hotels, restaurants, grocery stores, butcher shops, fruit stores and boarding-houses, the charges for the various places being set out in the said by-law, and the amount against each person to be handed to the clerk to be inserted in the Collector's Roll, and collected in like manner as other municipal taxes. The number of customers' names handed in to the clerk by me March 31st, 1915, was 95, and the amount to be collected $1,453.50. Since the returning of the Roll we have taken on 37 new customers. The amount to be collected for these is $141.75, making a total for the nine months, beginning March 31st and ending December 31st, of $1,595.25. In addition to this, we have hauled and distributed on the streets 78 loads of ashes. These ashes have been placed on the streets, under the direction of the town foreman, where most needed, and are the result of the cleanings from Oak Street restaurants, also the town hall, last winter. We have

also hauled and disposed of 65 loads of manure, which has accumulated from time to time at the fire hall and the Commercial Street stables. I might state that the work of hauling away street cleanings, which was formerly attended to by the public work teams, is now handled by the garbage team. We also clean all waste paper receptacles on Main and Oak Streets daily, and have during the year taken out to dumping grounds and destroyed by burning, dogs, chiefly from the Police Department.

This work of garbage collection, as you will note by the tariff, is carried on for the most part in the business section of our town, and you will also note that no provision is made for collection from private houses. I have had a large number of enquiries from private families during the year for service, but when informed that our lowest rate, namely, that of a boarding-house, was $1.00 per month, stated that they could not afford to pay this amount. I may say that had I been able to advertise the fact that we had a rate suitable for private families, we could have done a great deal more business. As the matter stands, your garbage system is just a little better than paying its way.

As stated in my Annual Report of last year, we require a system that will remove all putrefying animal and vegetable matter, rubbish of all kinds, save ashes and manure, from all houses within the municipality, the costs in connection with the work to be borne by general levy. Our neighbor to the west, Sudbury, has placed its garbage system on this basis. There does not seem to be any other method of overcoming what seems to be a rule among a large number of householders, to allow garbage to accumulate until it amounts to a load, asserting that if only part of a load is taken they are charged the price of a load, anyway, and that forced removal by your Health Department, when no system is provided, proves a hardship as well as a great expense. We have perhaps been able to keep our dumping grounds in better shape this year than during previous years. After having the annual clean-up in May last, I instructed our teamsters to spend sufficient time each day to ensure that all combustible matter was kept burned up. This has proved to be very successful, though primitive, and has been without expense to the municipality. I am taking this opportunity to again place before you the need of some kind of a destructor or incinerator, to be situated nearer the centre of the town. Our haul is much too long at present, being one and a half miles from the post office, so that nearly half of our time is spent on the road. I would like to have this question taken up seriously by the 1916 Council and Board of Health.

Dairies.

The question of a clean, wholesome milk supply is one of the most important matters which comes before a Board of Health and its officers, and has in consequence been receiving a great deal of attention. The Board on several occasions visited and inspected the plants themselves. I think the Board should be complimented on the stand taken in this connection. My instructions are to seize, dye, and return all milk which, after being run through the sedimentation tester, shows visible dirt. We have during the year seized and returned by this method forty gallons of milk. The proof of the quality of your milk supply is well demonstrated by the statistics furnished in the Report of the Medical Officer of Health, which are better evidence of themselves than any report I might make. I have periodically visited and inspected all dairies supplying milk to the town of North Bay, and all milk has been regularly tested for cleanliness and butter-fat. The display frame hanging in the town hall represents the amount of dirt filtered from one pint of milk, and the figures underneath each disc represent the amount of butter-fat it contains, and the smallest percentage allowed under the law is three per cent. If the public examine tests monthly, and govern themselves accordingly, I am sure there will be no questionable milk sold in North Bay.

Night Soil Collection.

The work of collecting the nightsoil from the various outhouses in use within the limits of the town, is carried on at night, the by-law providing that all outhouses shall be cleaned twice per month, and more often if necessary. This system is operated by Mr. J. Vachon, who holds a contract for one year, his price being $255.00 per month, ten per cent. being held back for the first three months and five per cent. for the balance of the year, as a guarantee that the contractor will carry out his contract. The price paid former scavenger, Mr. Roche, was $350.00 per month. From this you will see that the present Council have made a direct saving of $1,140.00 for the year. To date I may say that present contractor has been very satisfactory. Any omissions made by him have been promptly corrected when advised. This work has been much easier this year than during 1914, as we do not seem to have nearly so many foreigners as in

previous years. Our complaints in connection with this work would perhaps average one per day, which on investigation I would find that what was required was an extra service, other than the twice per month provided by the by-law. I do not mean that this is always the case, but eighty per cent. of supposed complaints invariably turned out as I have stated. However, to the credit of the scavenger, any complaints I have had to make have been attended to forthwith, and if he continues to give the same satisfaction during the winter months, when his work is doubled by reason of the frozen condition of the buckets, I will consider we have had a most satisfactory year.

I drew attention in my report of 1914 to method carried on in Ottawa for the disposal of nightsoil during the summer months, say from May to November. This consists of a manhole built on a good, large sewer in some well isolated portion of the town, and as the work is done at night when the sewer is not carrying any load to speak of, nightsoil is dumped into the said manhole and flushed into sewer by means of a water connection fitted in the manhole. This method would, during summer, dispense with the almost impossible task of trying to dispose of it on the dumping grounds. We would still, of course, have to haul to dumping grounds all collections during winter, but this is much easier disposed of. Such a scheme as I have outlined would do away with the long haul and I feel sure would reduce the cost of operation considerably. A very important matter has come to my attention lately, that is, a considerable number of buckets are worn out so much that they will have to be replaced by new ones, and owing to the fact that buckets are changed during winter, and it being almost impossible to ensure that each house gets its own bucket back, it looks as if the municipality would have to provide some new pails to replace those worn out. As I am unable to charge the cause up against the present scavenger, as he has not operated a winter yet, it will be necessary that some ruling be given regarding this at a very early date.

Water Supply.

We have had considerable trouble this year with our water supply. Early this summer it became evident, according to returns from analysis sent to Toronto, that Trout Lake was being polluted, so much so that our Medical Officer of Health, Dr. Brandon, saw fit to order the boiling of all water used for drinking purposes. In company with Dr. Brandon, also Provincial health officials, I have made numerous examinations at Trout Lake and vicinity, and although we have found and corrected a number of unsanitary conditions, I am sure that if legislation is not enacted to fully cover the situation before spring arrives, you will be up against the same proposition, with perhaps the addition of a typhoid epidemic. At the time of my writing the last two analyses sent show that the water has again reached normal conditions, being practically free from harmful organisms.

Our Market.

I am sorry to report that during the year a difference of opinion has arisen between the Board of Health and the Municipal Council. This difference has centred chiefly around the selling of milk and meat, the Board asserting that if these articles are to be sold on the market they must be sold in compliance with existing by-laws governing the selling of the said milk or meat. As the matter stands to-day, it is impossible to enforce By-law No. 439, which provides for the proper protection of all meats, etc. For example, on Saturday, the 11th inst., all available space in the market house was taken up and there was still offered for sale on the market square, without any protection whatsoever, part of ten loads of meat. You will see by this that to equalize matters, as conditions now stand, is nearly an impossible task. As a remedy, until a more suitable market house is built, I would suggest that placards be put up advising the farmers just under what conditions produce can be sold, and a second offence after being notified should be dealt with according to by-laws. It should not be necessary for me to attend every market day, but I am sorry to say such is the case. As the matter stands it is impossible to enforce the above-mentioned by-law throughout the municipality, and a question I am often called upon to answer is, "How is it you allow foodstuffs to be sold on the market without protection, and compel us to keep ours inside?"

A summary of my work for the year in detail would, therefore, be: Plumbing, 94 visits; served 650 written notices; have received and adjusted 80 citizens' complaints; received 75 letters and written 184.

I have not been compelled this year to go as often to the Police Court for adjustment as in previous years. Five cases are all that have been before the magistrate, and the fines and costs in this connection amount to $48.25.

TOWN OF RENFREW.

DR. J. J. McCANN, M.O.H.

I have the honor to submit to you the report of the sanitary condition of the town and the Health Department for the year ending December 15th, 1915, it being a brief *resumé* of the work done during the year, and a few suggestions for the future.

There have been reported during the year fifteen cases of scarlet fever, with no deaths; eleven cases of diphtheria, with no deaths; four cases of mumps, one case of whooping cough, four cases of measles; one case of smallpox, one case of tuberculosis, one case of chicken-pox and ten cases of typhoid fever, with two deaths; six of these cases were from out of town and were brought to town and hospital for treatment; there are at present under quarantine two cases of scarlet fever and one of diphtheria. Nine cases of communicable diseases were taken care of in the Isolation Hospital. In all cases where fumigation was required, it was done by the Health Officer, and instructions given *re* proper cleansing, etc. During the year both Public and Separate schools were fumigated. In one instance, following a slight outbreak of diphtheria, it was necessary to dismiss the pupils of one room in the Public School for a day while it was being cleaned and fumigated. With reference to the case of smallpox, it was contracted in the vicinity of Wilno, and as soon as recognized was quickly quarantined, those who had come in contact vaccinated, with the result that there has been no further cases.

The isolation hospital and equipment are in good condition, while the pesthouse has lately undergone some repairs.

During the year diagnostic outfits, as supplied by the Provincial Board, have been distributed to the local physicians.

One of the biggest problems which confronted us during the year was that of the purification of our water supply. With that object in view, samples were taken all along the Bonnechere as far as Eganville, and it was found that all were contaminated, the chief sources being the dumping of raw sewage into the river at Eganville, and that of sewage from houses on Ready Street and sewage and trade waste from the Renfrew Textile Co., entering the river a short distance below the intake pipe. Dr. Moloney, District Officer of Health, and Mr. Dallyn, Engineer of the Provincial Board, made a visit here, and they, with the Local Board, looked over the situation. These experts advised the laying of a sewer on Ready Street, the outlet to be below the bridge; the cleaning up of places along Smith's Creek, and the treating the water with "bleach," in addition to the alum which was already in use. These suggestions, I am pleased to say, were carried out, all places on Ready Street and the Textile Company now have sewer connections, and one has to but look at the effluent entering the river below the bridge to know that its presence there is more to be desired than where it could back up to the intake pipe. The money spent by the Council in this connection will pay big dividends in good health. A number of householders along Smith's Creek were ordered to discontinue emptying sink waste, etc., on the bank and into the creek. The Renfrew Tannery, which was also an offender here, has been cleaned up, and the sewer and trade waste, etc., pumped up into a nearby sewer. A chlorination apparatus was installed and now twelve pounds of chloride of lime, with about one hundred pounds of alum are added to the water in twenty-four hours. The result of all this has been satisfactory, at present the water supply being purer than any time during the year.

There have been a few complaints *re* nusiances which have been investigated and remedied.

During the year there have been 128 births, compared with 93 last year; and 46 deaths, compared with 54 last year.

There are at present about 300 outdoor closets. This is altogether too many, as a great many of them are on properties easily accessible to sewer connection, and I would urge on this Board and the Council that during the coming year some means be used to encourage more sewer connections. Outdoor closets are unsanitary and breeding places for flies, which are great carriers of disease.

The scavenger has carried on his work faithfully, but our method of nightsoil disposal is crude. It should either be emptied into the sewers through a specially-constructed manhole or, along with garbage, disposed of in an incinerator. I would urge the taking up of a garbage collection system during the year.

There is need of further sewer extension, as there are a number of new houses in the Aberdeen Park section which are closely adjacent to water supply and which have no sewer connection.

The Board has held ten meetings during the year. Generally speaking, the health of the town and sanitary condition is satisfactory.

I wish to thank the members of the Board and the Sanitary Inspector for their assistance and co-operation through the year.

TOWN OF WELLAND.

DR. J. H. HOWELL, M.O.H.

During the year there has not been any severe epidemic of infectious diseases. Ten cases of diphtheria were reported, nearly all during the autumn months, and one death occurred. The cases were scattered about the town, and about one-half of them were adults or children not attending school. There was no evidence of any spreading of the disease through the schools or by direct contagion. About half a dozen cases of mild scarlet fever were reported, with no deaths. Mumps have been quite prevalent and a few cases of measles have occurred. While there have been a few mild cases of typhoid fever, in the majority of cases the subjects have been employed outside the town limits, and there was no evidence of infection through our water supply. Examinations of the water have shown in every instance that the canal water is polluted, while that taken from the tap is free from intestinal bacteria. Safety demands, therefore, that we continue to chlorinate the water.

I am pleased to be able to report that the death rate for the town has been steadily declining. The Provincial report for the year 1914, which has just been issued, gives our death rate as 13.4 per 1,000, as compared to an average death rate of all the towns of the Province of Ontario of 15.4 per 1,000. Over 25 per cent. of these deaths occurred in children under one year of age. Three years ago our death rate was over 20 per 1,000.

While there has been a decided improvement in the sanitary condition of the town, there are still too many outside closets and uncovered manure heaps. These afford breeding places for flies, the great carriers of infection. If the public would unite in a campaign against the fly and his breeding places, the amount of sickness, particularly among children, would be materially lessened.

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